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In This Issue

MARGINAL NOTES

The Series on Government Standards—

S. P. Kaidanovsky's series of articles on Government Standards has run continuously through 14 issues since September 1953. With this issue, the continuity of Mr Kaidanovsky's articles is broken. No installment will be published this month or in December. Mr Kaidanovsky has been ill at his home in Lakewood, New Jersey, and has had to postpone further work on the series until he regains his strength. His friends hope that he will soon be strong enough to take up his work again. Judging from the requests for further information and for copies of the articles, Mr Kaidanovsky's contribution to greater understanding between Government and industry will be missed by many readers of THE MAGAZINE OF STANDARDS.

In This Issue—

It is a privilege this month to present the scholarly and challenging article on telecommunications by Dr Hakan Sterky (page 000). This was one of the outstanding papers with promise for the future presented at the Jubilee Day meeting of the International Electrotechnical Commission.

What to Look for in December—

Carol, Edna, and Hazel will be the subject of the lead article in the December issue. The Bell Telephone System found that standardization helped rally its forces from all sections of the country to repair

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Single copy 50¢. $7.00 per year (foreign $8.00). Schools and libraries $5.00 (foreign $6.00). This publication is indexed in the Engineering Index and the Industrial Arts Index. Re-entered as second class matter Jan. 25, 1954, at the Post Office, New York, N. Y., under the Act of March 3, 1879.

Opinions expressed by authors in THE MAGAZINE OF STANDARDS *are not necessarily those of the American Standards Association.*

the damage done by these three hurricanes in the Middle Atlantic and New England states. John H. Mitchell, engineer in the Operation and Engineering Department, American Telephone and Telegraph Company, tells the story.

All concerned with the literature of acoustics will be interested in the why, wherefore, and how of the proposed American Standard terminology for the subject of shock and vibration as presented by Dr Sanford P. Thompson, Naval Research Laboratory, and chairman of the committee working on the proposed standard. The committee is asking for comments on the terms it proposes to standardize.

This Fall a meeting in Brazil decided to push activity on Pan American standardization. E. F. Seaman of the Navy Department's Bureau of Ships was the USA representative and presented a paper at the meeting. His report of what took place will appear in the December issue.

Index to Volume 25, 1954—

Watch for the Index to this 1954 volume. It is being published as Part 2 of the December issue, bound separately, for your convenience in binding the volume for your library.

This is a good opportunity to call your attention to the fact that THE MAGAZINE OF STANDARDS is microfilmed by University Microfilms, Ann Arbor, Michigan, and copies can be obtained from them.

The Front Cover

Indian girls carrying bobbins in a textile factory at Bombay. India is taking an active part in development of international agreements for tests and performance requirements for textiles in Technical Committee of the International Organization for Standardization. Importance of standardization in India is indicated in the new building now being constructed for the Indian Standards Institution (page 360).

This Month's Standards Personality

Elmer H. Weaver

When Elmer H. "Buck" Weaver addressed the Company Member Conference and purchasing session during the Fifth National Conference on Standards, November 16, he spoke on behalf of the National Association of Purchasing Agents. He didn't mention, however, that his work with the Association as chief advocate of standardization had brought him purchasing's highest award for 1954. At the Annual Banquet of the Thirty-Nineth Annual International Convention of the National Association of Purchasing Agents in May, he had received the J. Shipman Gold Medal for his contributions in the field of industrial purchasing.

Mr Weaver was at the forefront of the movement to bring purchasing and standards together when the idea was first discussed at the Procurement session of the First National Conference on Standardization in November 1950. At that time the Committee on Standardization had just been organized by the National Association of Purchasing Agents and the interest of the purchasing executive in the use of standards was very new. Mr Weaver was the first chairman of the NAPA Committee on Standardization. He is still chairman. He had to drop most of his activities during the past year, however, when he was on temporary leave from all his regular work for service with the Government.

The reason for the leave reflects "Buck" Weaver's high standing in his industry as well as in purchasing and standardization. He was serving as Assistant Director for Materials of the Office of Defense Mobilization in Washington. This was his third tour of duty with the Government. In World War II he had served as Petroleum Consultant to the War Production Board; again in 1951-52, he was Petroleum Consultant to the U.S. Air Force.

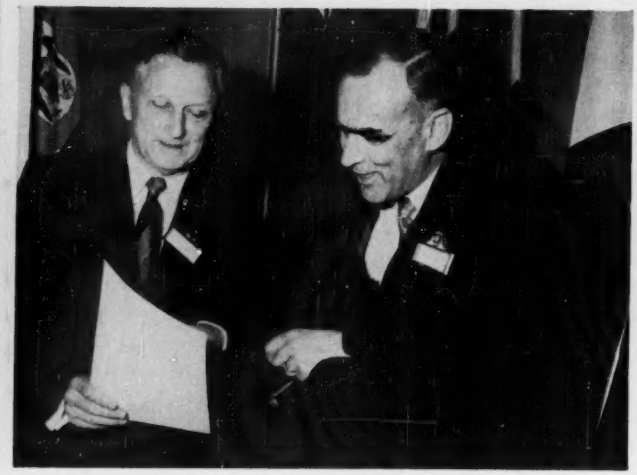
He has now rejoined the Union Oil Company of California where he is Vice President as well as Manager of Purchases. He has been with the company since 1918, starting as a buyer in the Purchasing Department, and has been Manager of Purchases since 1945.

"Buck" Weaver joined the Purchasing Agents Association in Seattle, Washington, in 1922. He has been President and National Director for the Seattle Association and has held office as vice-president of District One of the National Association. He has also helped with the Association's work as a contributing editor to the first National Association of Purchasing Agents' handbook, as a member of national committees, and as general program chairman of the annual international convention in Los Angeles in 1953. His field of interest is indicated by the fact that he has served on the NAPA's Business Survey Committee, the Oil Company Buyers' Group, the Containers Committee, and the NAPA Education Committee.

WATCH YOUR DRIVING — AND WALKING
ON "S-D DAY" DECEMBER 15

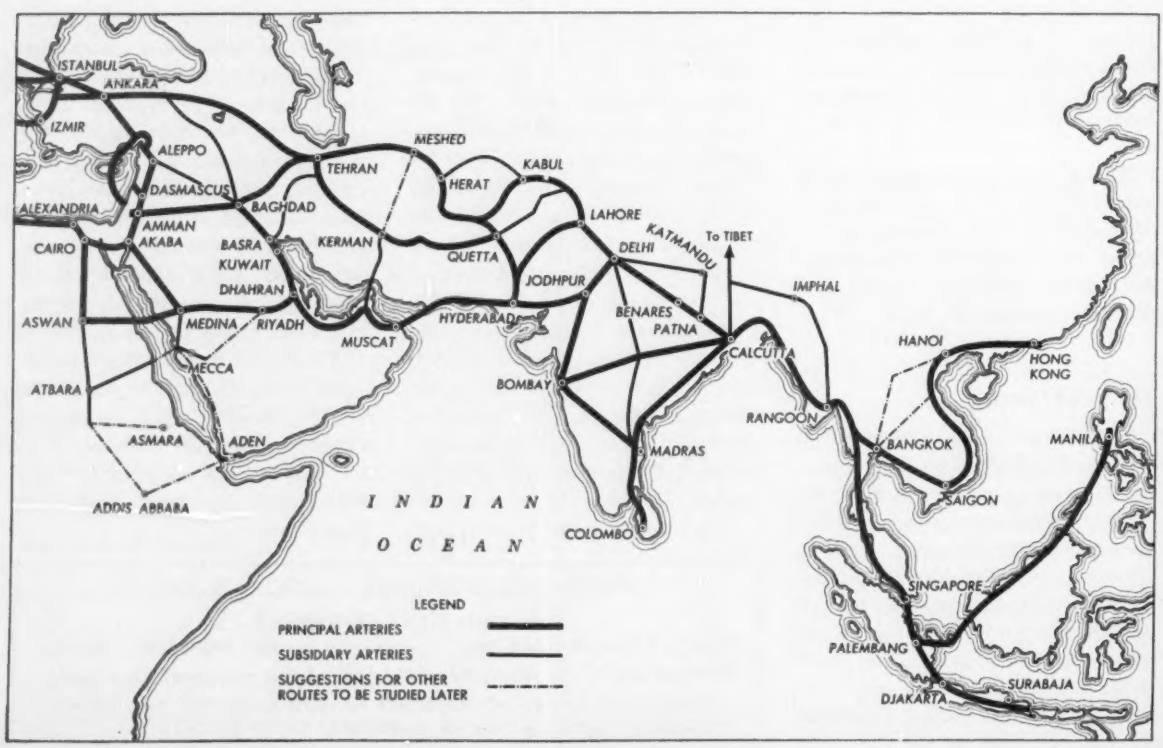
This is "Safe Driving Day" sponsored by the President's Action Committee for Traffic Safety. As one of the cooperating organizations, ASA urges all Members to help keep the 24 hours of "S-D Day" entirely free of accidents.

Past, Present, and Future



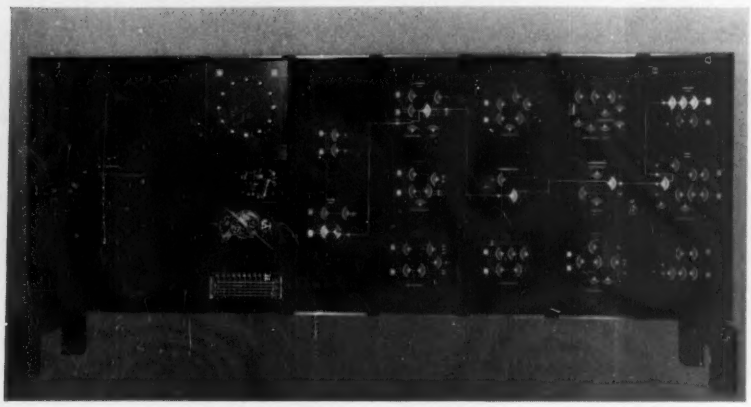
Western Electric Co.

Today's long distance telephone *communication can now be extended by means of telephone, radio, and television to the most remote parts of the world, Dr Hakan Sterky told the International Electrotechnical Commission's Jubilee Day meeting at Philadelphia, September 9. Above, right, Dr Sterky with Dr H. S. Osborne, formerly Chief Engineer of the American Telephone and Telegraph Company, now IEC president. Below, a tentative route map showing how a complete telephone network could link Europe, the Middle East, and South Asia.*



# of Telecommunication Standardization

by DR HAKAN STERKY



This Panel *shows traffic routes and switching operations of the fully automatic telephone system in the Stockholm area. The electrotechnical symbols — dots, lines, squares — become luminous to demonstrate how an automatic call is put through.*

THE continents of the world are now covered by a fine network of wires conveying millions of telegrams and telephone calls every hour. Countries and peoples are linked together by means of cables and radio. Private intercommunications, navigation, trade, business men's conferences, and statesmen's deliberations depend to an ever-increasing extent on good telecommunications. News and entertainment are spread to more and more people by means of broadcasting and television. The development of telecommunication technics constitutes, together with aviation and the use of atomic energy, the most remarkable feature of progress in our century. No end to this development can be perceived. On the contrary, expansion seems to proceed at accelerated speed. The achievements of science are putting new means of progress into the hands of technicians, and a deeper knowledge of man's relation to the machine may be expected to result in an increase of production. Improved operating methods and standardized equipment will enable products to be cheapened. Thus, vistas are opened of further extension of telecommunications, making telegraphy, telephony, broadcasting, and television available to an ever-increasing number of inhabitants of the world.

On this great occasion, when the International Electrotechnical Commission is celebrating its Golden Jubilee, I have been called upon to illustrate, before this competent audience, the part which standardization is already playing and may be expected to play in the development of telecommunications. In a rapidly expanding technical world it is the duty of all men, and especially of engineers, to solve present problems in the light of experience accumulated in the past, to bring new solutions to our daily tasks, and above all to look ahead, paving the road for future achivements. It appears appropriate to adopt this motto for my lecture on the subject "past, present, and future telecommunication standardization."

1. Early Activities and Results

Unfortunately, efforts made to find a comprehensive or sufficient documentation regarding the means and purposes of standardization in the early days of telecommunications have failed. This is true, in any case, about the field of standardization which interests us in this connection, namely *international* telecommunication standardization. In particular, it has proved very difficult to find any written material concerning *national* standards used in different countries before the end of the first world war. On closer consideration, this is perhaps not to be wondered at since the importance attached to standardization in the present-day community was neither acknowledged nor clearly perceived by industrial managers, designers, or technicians concerned with production in earlier days. And yet, there are some splendid exceptions which deserve mentioning here.

It was in a divinely inspired mo-

The Author—*Dr Sterky, Director General of the Royal Board of Swedish Telecommunications, presented this paper at the Jubilee Day meeting of the International Electrotechnical Commission, Philadelphia, September 9. Dr Sterky represented the International Telephone Consultative Committee at the IEC meetings in Philadelphia.*

ment that the artist Samuel Morse, in 1832, while returning by ship from Europe to the United States, conceived the idea of recording, by means of an electromagnet, electrical impulses on a continuously moving strip of paper. Before his arrival in New York, Morse had made plans for a telegraph recording instrument and laid down the principles for his dot-dash-space code based on the duration of the absence (or presence) of the electrical impulse over a circuit. The first Morse telegraph line, however, was not erected until 1844—110 years ago—in the USA. The dot-dash-space code, i.e., the Morse telegraph alphabet, seems to have been the first standard developed in electrotechnics—or maybe in any field of technics. It is most appropriate to pay a tribute on this occasion to the great American, Samuel Morse, and to express the hope that ideas of the same utility may be conceived by at least a few of the great number of travelers who arrive at or leave New York by boat or by plane every day.

As early as in August 1903, only a few years after Marconi's successful trials with radio-telegraphy, the question of introducing a special signal to be used by ships in distress was discussed. The first International Radio Convention which was signed by 27 nations on November 3, 1906, in Berlin, contained stipulations as regards priority for distress calls from ship stations. The radio-telegraph regulations annexed to that Convention contained, in accordance with a proposal made by the German Administration, additional provisions concerning the distress signal . . . — — — . . . , SOS of the Morse code and its use. Innumerable are the human lives and inestimable the economical values which have escaped death and destruction thanks to this international standardization.

As early as 1926, when the International Consultative Committee for Telegraphy (CCIT) — about which more will be said later—held its first meeting in Berlin, the question of introducing standardized codes for telegraph typewriters was

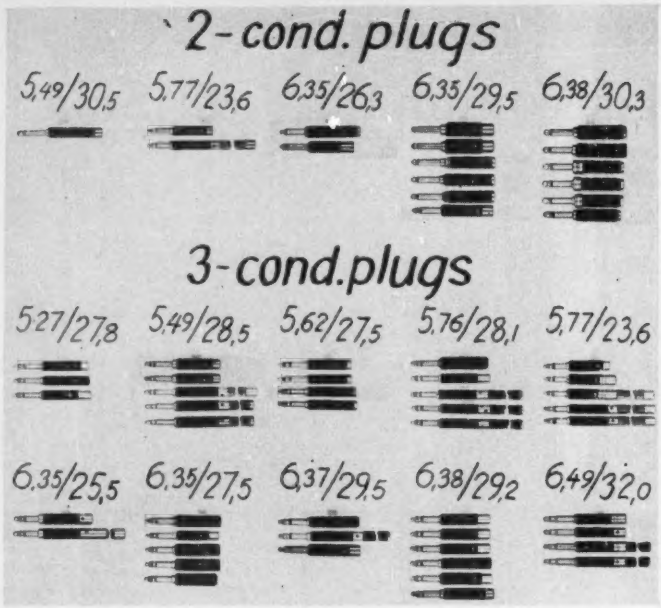


Fig. 1 *Variety of plugs and jacks produced by one small European manufacturer. (Top—2-conductor plugs; center and below—3-conductor plugs.)*

raised. The five-unit telegraph alphabet invented by the Frenchman Jean Baudot was used as a basis, and in 1929 two different alphabets were adopted, one for older apparatus and another for start-stop apparatus. In 1931, after it had been found necessary to reconsider this decision, the latter standardized alphabet was discarded and replaced by a new standard, which is still in use. The manner in which this question of telegraph standardization was treated is symbolic of all successful standardization activities, showing as it does that a compromise solution may be obtained by broad-minded international cooperation.

In the telephone field, a few examples of specifications and standards of early dates may be mentioned which have been of extraordinary importance for the development of telecommunication technics. If the purpose were solely to connect two individual telephone instruments, it would be possible to leave the designers and manufacturers entirely free to produce any type of transmitter and receiver, provided that satisfactory transmission of speech were assured. But this is not the actual problem in present telephony. It must be possible to connect each set of the 85 million subscribers in the world with any other set in any conceivable combination. This condition—full interconnectibility—is unique in the world of technics. In principle, the function of power consumption apparatus is independent of all other appliances, but the performance of a telephone instrument affects the function of all other telephones in the world. Thus it is no exaggeration to say that the fundamental condition for the functioning of a national or international telephone network is unification and standardization. No wonder then that from the very birth of telephony it has been necessary to lay down functional standards of performance requirements, methods of tests, etc, in telephone engineering. The International Consultative Committee for Telephony founded in 1925 has accomplished invaluable work in this connection.[1] In close cooperation with the AT&T, recommendations have thus been elaborated for the over-all reference equivalent for telephone transmission between two subscribers, standards of band widths and of distortion for speech and music transmission circuits and many more, which for decades have

[1] For reference, see list at end of article, page 356.

governed the expansion of telephone networks.

International standardization work in the telecommunication field has been particularly active since the middle of the 1920's, and it has been directed primarily toward functional standards. However, long before that time, national standards were in force in many countries, especially in those where big enterprises were entrusted with the operation of telecommunications as, for example, the United States, the United Kingdom, Germany, Switzerland, and Sweden. In these countries, attention was devoted also to dimensional standards for industrial products.

There is no doubt that the international standardization work should be extended to cover dimensional standards. A glance at Fig. 1, showing a variety of dimensions of telephone plugs and jacks produced by one single small European manufacturer,[2] leads logically to the question of whether or not the stocks of telephone companies must be as well supplied as grocers' shops. Similarly, an attempt to standardize the dimensions of mounting panels and racks for telecommunication equipment would certainly be of benefit to operating companies, manufacturers, and, consequently, to the public.

2. Differences Between Telecommunication and Power Engineering

In comparing means and aims for standardization in the electrotechnical field on one hand and in mechanical engineering on the other hand, one finds that electrotechnical standards comprise chiefly nomenclature, quality requirements, performance specifications, ratings, and testing methods, whereas in standardizing mechanical products for industrial manufacture, importance has been attached chiefly to qualities of material, dimensions, and tolerances. The explanation is evidently to be found in the fact that electrotechnics are based on the science of electricity, which is rather an intangible subject, while other branches of engineering deal with the handling and formation of more concrete matters.

Similarly, there are essential differences between the aims of technical standardization in the power and in the telecommunication fields and between the results there obtained. One such difference has been pointed out in the preceding chapter, where I mentioned the indispensable requirement of full interconnectibility of telephone instruments and the greater freedom enjoyed in the design of power appliances. But there are other differences, and it therefore appears appropriate to go a little further into this matter.

First, it may be stated that, for natural reasons, operation and maintenance are more international in character for telecommunication than for power engineering. Thus, in the former field, standardization must in the first place aim at the establishment of fundamental requirements in respect of complete plants and systems. In power technics, on the other hand, it has been possible, also on an international basis, to devote considerable work to the standardization of individual apparatus, such as generators, motors, transformers, and circuit breakers.

We in this highly industrialized nation are still using standards inadequately and improperly. We write standards to solve problems instead of to keep problems from arising.

Roger E. Gay, president, The Bristol Brass Corporation; president, ASA.

In power engineering the number of consumers, for example private and municipal electricity works, is rather large, but the number of producers, on the other hand, is comparatively small. In telecommunications, on the contrary, the operating enterprises in *most* countries are few, and they have accordingly been big enough to be self-contained and isolated. Power appliances are in general consumer-owned, whereas most telegraph and telephone apparatus are rented to the users. Moreover, the safety requirements are of greater importance in power than in telecommunication engineering.

The result of these differences is that the standardization of fundamental components or complete outfits in telecommunication is less well known to electrical engineers in general and the public in particular than in power engineering. Compare, for instance, a telephone subscriber's instrument and an incandescent lamp.

The work of the IEC began with the aim of standardizing nomenclature and ratings of electrical apparatus and machinery for heavy current and has already, after only 50 years, achieved important results. It is, however, appropriate to emphasize that standardization has advanced just as far in the weak current field, although on somewhat different lines. *International* telecommunication standards have been based primarily upon requirements of joint operation, whereas relatively little importance has been attached to standards promoting international trade in telecommunication equipment. The work done by the CCIF in standardizing, e.g. carrier systems, is just as complete and of the same importance in world-wide telecommunication as are the IEC standards for electric machinery in the international power engineering field. In quite a few countries *national* telecommunication standardization has advanced very far, being promoted and required by the large telegraph, telephone, and radio operating organizations.

Having drawn attention to the divergent lines of standardization in the heavy and weak current branches of electrical engineering, I should like to conclude this chapter by stressing one field of *common interest to both branches*. The work done by the IEC in close cooperation with the International Consultative Committees of the International Telecommunication Union, which comprises electrotechnical nomenclature, letter symbols for units and magnitudes, graphical symbols, and general testing specifications is probably unparallelled in other branches of engineering and science. The result is of equal importance to power and to telecommunication engineering and has

greatly facilitated international exchange of thoughts and opinions.

3. The International Telecommunication Union (ITU), its International Frequency Registration Board (IFRB) and its Consultative Committees

The year 1865 was of outstanding importance for international cooperation in the telecommunication field.[3] It may also be considered as the year of birth of international telecommunication standardization, since in that year the first Telegraph Convention was signed in Paris by 22 countries. By it there were obtained, through voluntary agreement, the first binding and distinct international regulations for the joint economic, operational, and technical relations between the administrations and private enterprises in charge of international telegraph services. Since then, cooperation has been continued and extended to comprise telephony and radio as well. The conferences of Vienna (in 1868), Rome (in 1872), and St Petersburg (in 1875) still belong to the telegraph period.

When, in the beginning of this century, radio technics came into use for maritime purposes, the need to have regulations for the standardization of technical equipment and operating methods became urgent. As a matter of fact, the different systems of radio-telegraphy were not able to cooperate with each other at that time. This great disadvantage subsisted in radio communications until 1906, when it was removed by the International Radiotelegraph Convention signed in Berlin, later revised in London in 1912 and in Washington in 1927.

After the first world war, when international telephone traffic had been made possible by the development of electronic valves and filter technics, the International Consultative Committee for long distance telephony was founded in the year 1924, mainly to deal with European telephone questions.

At the International Conference of Madrid in 1932, all provisions concerning telegraphy, telephony, and radio were merged in the International Telecommunication convention with its annexed Telegraph, Telephone, and Radio Regulations. This Convention was subjected to important alterations when revised at the Atlantic City Conference in 1947. It was again subject to deliberations in Buenos Aires in 1952, and the convention now in force bears the name of that city.

These years constitute significant milestones in an important international field. In our days, when all countries are placing such great hopes in the activities of the United Nations, it may be worth mentioning that the ITU seems to be the oldest intergovernmental organization for cooperation in the world. The International Postal Union (IPU) is somewhat younger, dating back to 1874.

Like most old institutions, the ITU[4] has grown up and been adapted to its purpose rather than starting as a ready-made organization. That is to say, it was started to meet a practical need and has been developed in various directions from time to time to meet practical needs as they arose. These needs, one after another, began to be felt by countries cooperating in the international telecommunication services made possible by the progress of technical invention and necessitated by the growth of international trade. The ITU is an organ of voluntary international collaboration. That is to say, its purpose is to make possible, or to facilitate, day-to-day collaboration in the specialized field of telecommunication between the independent but closely linked nations of the modern world.

The function of the ITU which chiefly concerns this lecture is that of conducting the international study of technical, operating, and tariff questions. The need for such study on an international basis is to a large extent due to the increasingly technical nature of telecommunication methods. Before the days of long-distance telephony and radio, a fairly wide degree of variety in technical methods was not inconsistent with the efficient functioning of an international telegraph service, in which messages were forwarded successively from one office to another. Periodical international telegraph conferences sufficed to secure the necessary general agreement between countries on methods of operating the international circuits and of charging for the facilities provided to the public. For at least the last generation, however—say, since the development of the electronic valve — telecommunication has called for a high degree of international standardization, because otherwise, modern methods cannot be applied to telecommunication services connecting different countries. To meet these needs, the ITU now disposes of characteristic special organs, namely the three International Consultative Committees (CCI's), viz, the Consulative Committee for Telephony (CCIF), for Telegraphy (CCIT), and for Radio (CCIR). In the course of about 30 years these "Committees"—they are not, in fact, committees in the ordinary sense of the word but rather, special organs of the Union—have developed a characteristic structure and methods of working which are closely adapted to their special functions and similar to the corresponding procedures of the IEC.

Simultaneously with the Plenipotentiary Conference at Atlantic City in 1947, an administrative radio conference was held which was attended by delegates from 78 countries. The principal tasks of this conference were to revise the frequency allocation plan in force since 1938 and to lay down new regulations for all radio services. It was decided to set up, within the ITU organization, an International Frequency Registration Board charged with the function of arranging for the protection from interference of duly *registered* frequencies. Thus—to use a characteristic English phrase—an international traffic policeman of the ether was set up, although there is nothing in the international field analogous to the legal powers conferred on traffic policemen.

The assignment of different frequency bands to all kinds of radio services in different regions of the

world by international agreements —also a result of the Atlantic City Conferences — is a far-reaching manifestation of international cooperative spirit and an evidence of healthy conditions in international telecommunication standardization.

Two other international standardization bodies, operating in the borderland between the ITU and the IEC, should be mentioned. The International Special Committee on Radio Interference[5] (CISPR) held its first meeting in Paris in 1934, with delegates also from other international organizations. Its aim is to elaborate standard methods of measurements and to fix limits for the interfering properties of power-operated equipment on radio communication.

With the establishment of radio broadcasting, the need for standardization of safety requirements for mains-connected receivers was self-evident. Work for that purpose was started on an inter-European basis as early as the middle of the twenties by the Installations Fragen Kommission. After the second world war its activities were taken over by the International Commission on Rules for the Approval of Electrical Equipment (CEE), and they deal with all kinds of power appliances for domestic use.

4. The need for national and international standardization for the advancement of telecommunications.

Eighty-eight years after the successful laying of the first telegraph cable across the Atlantic, plans for the *first telephone cables,* connecting the two continents, Europe and America, were announced at the end of 1953 (Fig. 2). The connection will be established between Oban in Scotland and Newfoundland, over a distance of about 2000 nautical miles, by means of *two* coaxial cables. From Newfoundland to Nova Scotia a *single* submarine cable will be laid over a distance of 310 miles. In Scotland access to the BPO network will be obtained and thus also to the rest of Europe. All North American subscribers will be reached via microwave radio links from Nova Scotia to New York and

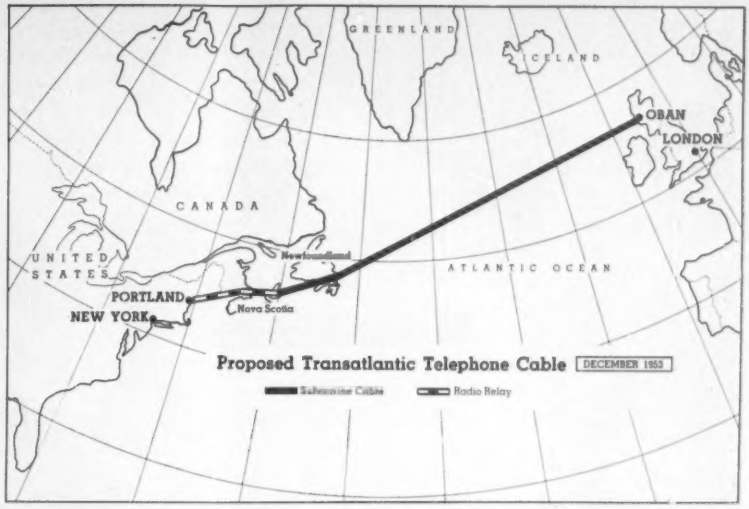


Fig. 2. *Plans for the first telephone cables to connect two continents, Europe and America, were announced in December, 1953. This map shows the general route. Two coaxial cables will run under the ocean for some 2,000 miles from Newfoundland to Oban, Scotland. Submarine repeaters will be placed at intervals of 40 nautical miles. A single cable will connect Newfoundland and Nova Scotia. Microwave radio links will reach subscribers from Nova Scotia to New York and Montreal. Access to Europe will be through the BPO network.*

Montreal. Submarine repeaters, containing electronic valves with an estimated lifetime of more than 20 years and designed to withstand sea pressure up to 5 tons per square inch will be placed at intervals of 40 nautical miles. The power to operate the amplifiers will be supplied through the coaxial cable center conductor from the terminal stations.

No large body of land on earth is separated by more than 290 miles from some other body of land (Fig. 3). This is a simple fact of geography, but it has today inspired a *vision,* namely the North Atlantic Relay Communication (NARCOM) and the United Telecommunications' (UNITEL) plans (Fig. 4), which is no less than revolutionary in its implications for communication between men the world around.[6] It is a vision which seems, at first sight, as if it had been conjured up by science fiction: intercontinental television, passing over oceans and into areas which today are still dependent on the river steamer and the monthly mail pouch; instantaneous telephone conversation with any part of the globe, penetrating into jungle wilderness where today the beat of native drums is the sole source of human communication; walkie-talkie connection between the manager of a Malayan rubber plantation and his home office in the City of London. Futuristic as all this may seem, there is nothing fictional about it. As a matter of hard, technical fact, a complete global communications network—both visual and auditory—could be erected.

During the last years, CCIF, whose activities from the start were confined to the European area, has taken up studies of how the European telephone network could in the most efficient way be linked together with the networks of the Southern and Eastern Mediterranean states.[7] Last year at a meeting in Lahore, India, the plans were extended to embrace the Middle East and South Asia. A careful analysis of the present traffic volume and an estimation of the number of circuits needed in the near future have been made. The requirements of all the nations involved have been grouped together and a tentative route map has been drawn, showing the arteries of the complete system (see Frontispiece). As the plans are still in a preliminary stage no decisions—not even recommendations—as to the technical means which should be

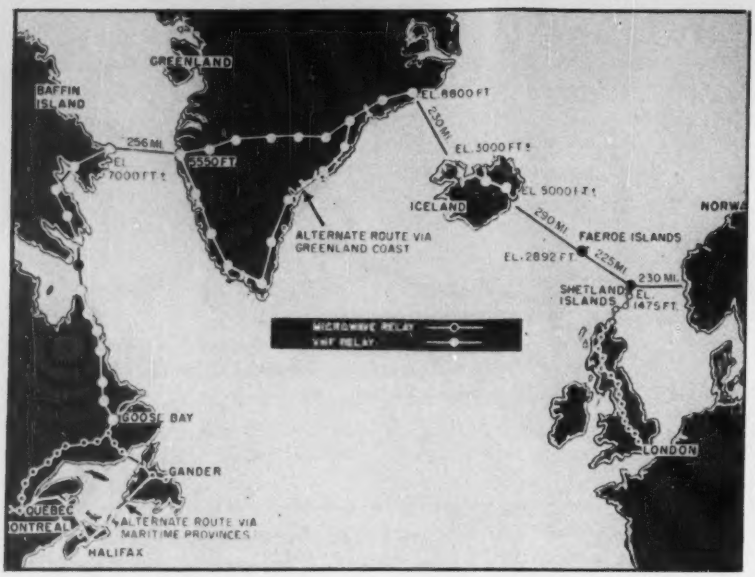
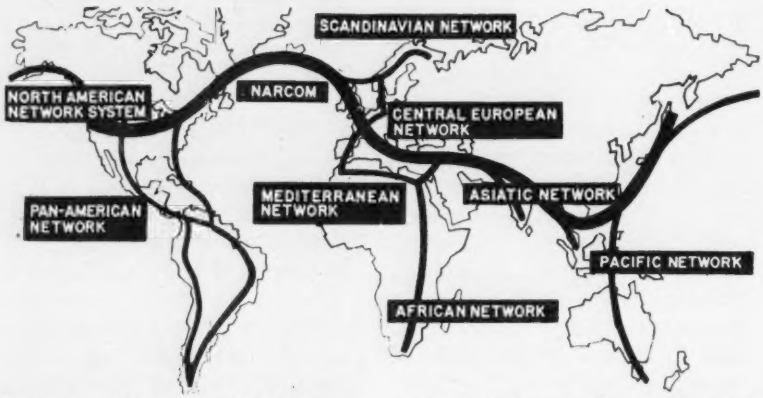


Fig. 3 *(left). Intercontinental television is now possible, say experts in telecommunications, since no large body of land is separated by more than 290 miles from any other land.*

used for realizing the project have been indicated. Nevertheless, it is likely that, in addition to carrier systems of common design on bare wires and cables, both submarine coaxial cable systems and radio links will be useful and will serve to accomplish the far-reaching plans.

Regarding the North Atlantic submarine telephone cable project, a spokesman for the Post and Telegraph Administration of India[8] made the following remark: "The panegyric for this notable scientific and technical achievement has been greatly dimmed by heralding the success of nuclear weapons of destruction. The constructive planning towards better means of communication between the two hemispheres by the provision of a direct voice link between them will increase human happiness and is indeed worthy of world attention. While the ether is crowded with the jargon of disharmony, let the whisper of peace travel around one world along a metallic girdle, well protected and hidden under the seas."

These three examples, one of which is already well on the way to being realized, the other two being entirely feasible plans, indicate clearly two fundamental facts. Firstly, it would have been sheer daydreaming on the part of the planners to take up the projects for serious consideration if in the telecommunication field the cooperation between nations had not been so close as it is today and if the standardization of equipment and methods in telegraphy and telephony had not reached a safe stage. Secondly, the projects and plans stress the importance of wholehearted future assistance both from the ITU and the IEC in promoting more, better, and new telecommunication standards. In my opinion, the two bodies should have quite different goals and methods of approach in this combined effort.



The role of the Consultative Committees of the ITU. The work of the Consultative Committees of the ITU in creating new and better recommendations and standards for the planning, design, construction, operation, and maintenance of different telecommunication plants must be intensified and widened. The field for such an activity is so vast that it would not serve any useful purpose if I tried to enumerate all the desired standards in the different branches of telegraphy, telephony, and radio. Let me merely indicate the following: standards of impulse ratio for dials; rules for the distribution of over-all attenuation in telephone networks; standard signal tones for automatic telephony; recommendations on modulation methods for carrier systems on wire and radio circuits; operating methods and operators' routines for traffic on telephone, telegraph, and radio channels; distress frequencies and call signals for safety at sea and in the air, etc, are all needed (Fig. 5). In the cases where work is already completed or well under way, continuous revisions and improvements may be necessary. In conformity

with well-established practice, the work of the Consultative Committees should be directed to recommendations and functional standards of such general nature that different solutions and designs by interested producers in various countries will not be excluded.

The task of the IEC in telecommunication standardization. Certain study groups of the CCI's are maintaining good contact with the related committees of the IEC, particularly on questions of nomenclature, definitions, and symbols. In the member countries of the two organizations there also exists coordination on matters of common interest. It seems to me, however, that still closer cooperation between the IEC and the ITU in existing and new fields of electrotechnics is indispensable. This should be rather easy to accomplish in view of the fact that both organizations have their head offices in Geneva. The future work of the IEC in the telecommunication field should aim at establishing industrial and dimensional standards for components, apparatus, and equipments.[9] The following examples are given only to indicate the types of objects on which interest should be centered: dimensional standards for switchboard plugs and jacks, for bases and sockets of electronic valves, of semiconductor diodes and transistors as well as for panels and racks; measures to facilitate the interchangeability of equipment units by means of world standards for connecting and wiring devices; quality specifications and dimensional standards for weak current lightning arresters and fuses; recommended standard series for resistors, inductors, and condensers; ratings for radio transmitters; quality specifications for radio and television broadcasting receivers.

Throughout the existence of the ITU and the IEC the number of members has gradually increased, a gratifying sign that the role of electrotechnical standardization is arousing more and more interest and support among nations. Highly industrialized countries of the world consider standards indispensable and are making continual progress in promoting and fostering the idea. In those countries, however, the work seems to have reached a certain stage of stability. For nations where industrialization is of comparatively recent origin and telecommunications are not yet developed, the results of the IEC and ITU standardization work already available should be a tremendous benefit to national engineering and economy.[10] Their standardization childhood will be short, owing to the fact, among others, that through accepted nomenclature, definitions, and symbols, those concerned already speak the same language easily and rapidly.

5. The Scylla and Charybdis in future telecommunication standardization.

There is no doubt that both national and international standardization have entered the telecommunication field to stay. Particularly in this technical field of human progress, where conditions are no longer static, but new scientific discoveries, inventions, designs, and methods of production are pushing development forward at an accelerated pace, we cannot and have no right to neglect the dangers. To maneuver between Scylla and Charybdis is of paramount importance for years to come. Standardization is conservative by nature, and it may, if carelessly handled, prevent sound progress. On the other hand, I need hardly waste the time of this audience in combating the myth that standardization—that much misused word—leads to uniformity and mediocrity and applies a brake to enterprise and invention.[11] It is surely self-evident that applied standards have played an enormous part in that improvement of living standards and comfort which modern industrialized communities enjoy over those of earlier times.

Accordingly, there is to my mind no reason to fear a conflict between standardization and progress in the telecommunication field if it is well handled and conducted by broad-minded men and organizations. If in this way new work is taken up with the right timing and when the need has been proved in each individual case, standards will be excellent and useful regulators of the economical excesses of technical advancement. Its aim must be to promote "ready-made" rather than "made-to-measure" tailoring in industrial production, thus making more commodities available to the operating administrations and companies at low prices and with short delivery times. Standardization will also assist in solving an intricate problem in management of today, namely the shortage of trained research workers and technicians. Without standards, every manufacturer would have to spend excessive time and money on design and production of a great variety of components which, when standardized, may be obtained from specialists. In this way the available supply of personnel will be used in a more efficient way. Moreover, international functional and dimensional standards must be made available to all interested by open and authoritative publication. On this condition only can standardization form a spur to competition.

Great responsibility rests upon organizations and leaders of standardization for tomorrow. On the one hand, it is necessary that business be conducted with due celerity and that decisions be reached in a minimum of time. On the other hand, every interested party must be allowed a fair shout and a fair hearing so that the decisions made will always be the best possible decisions at that particular time. Standards do not come just from putting everybody's ideas into a pot, shaking it around, and producing an average. In regard to the future, I want to stress that although international standardization must be kept active, it must proceed by stages and not remain in constant flux. Otherwise, if already accepted standards are changed too often, large amounts of capital will be tied up uselessly in stores and warehouses.

Another important aspect of future standardization is the question of how to make the results available to the general public. The language we electrical engineers speak and the

Branch and object	International organizations involved as • executive body □ cooperating body x interested body		
	IEC	ITU	CEE
1. **Telegraphy**			
a) Character code for telegraph typewriter service	□	•	
b) Keyboards for telegraph typewriter.	•	□	
c) Phototelegraph apparatus.	•	□	
2. **Telephony**			
a) Switchboard plugs and jacks.	•	□	
b) Impulse ratio for dials.	□	•	
c) Distribution of over-all attenuation in telephone networks.		•	
d) Operational methods and code signals for manual and semiautomatic telephone service.		•	
e) Signal tones for automatic telephony.	x	•	
f) Subscriber cables.	•	□	x
3. **Radio**			
a) Distress frequencies and call signals for safety at sea and in the air.		•	
b) Operation methods for broadcasting and television program circuits.		•	
c) Ratings for radio transmitters.	•	□	x
d) Quality specifications for radio and television broadcasting receivers.	•	□	□
e) Sound recording devices for program exchange.	•	□	x
4. **Telecommunication in general**			
a) Bases and sockets of electronic valves, semiconductor diodes, and transistors.	•	x	□
b) Dimensional standard series for panels and racks.	•	x	
c) Provisions for facilitating the interchangeability of equipment units and panels.	•	□	x
d) Standard series for resistors, inductors, and condensers.	•	x	
e) Quality requirements and dimensional standards for lightning arresters and fuses.	•	□	x
f) Modulation methods for carrier systems on wire and radio circuits.	□	•	

Fig. 5. *Suggested role for international organizations where standards are needed.*

symbols we use are generally considered by laymen to be worse than Sanskrit or Runes—at least that is our impression, and we have been content and have submitted to the fact. The Swedish telecommunication administration has recently had the opportunity of realizing that this need not always be the case. On the occasion of its centenary on November 1, 1953, a gift was received from the L. M. Ericsson Telephone Company in the shape of an illuminated demonstration panel indicating traffic routes and switching operations in the Stockholm full automatic telephone area.[12] It is 5 yards long, 3 yards high, weighs about 1.5 tons, and contains more than 2200 electric bulbs, 1 telephone answering machine, and 1 charge indicator. By means of well-known electrotechnical symbols consisting of dots, lines, triangles, squares, and "fans" successively appearing luminous on a dark background of the panel, the spectator can follow the process of an automatic call being established between subscribers of several different exchanges. I can assure this audience of specialists that many thousands of visitors, men and women, boys and girls, and experts and laymen from many countries, have not only admired but also have benefited from the demonstrations; they have gained a deeper insight into the fascinating art of telecommunication and have grasped even such ideas as the distinction between a step-by-step and a marker automatic telephone system, which only graphical symbols can convey. This precious gift from a producer of telephone material constitutes one of the best means of propaganda, both for telephony and for standardization, ever placed in the hands of an operating organization.

To conclude this lecture I should like to associate myself with an eminent thinker who once said that "standardization is to industry and commerce what culture is to society; that is, just as rules of civilized behavior regulate social intercourse of man and his appreciation of cultural values enrich his intellectual and spiritual life, so does standardization help to regulate the conduct of commerce and trade in a smooth and efficient manner; and assists in improving productivity and efficiency of man and machine." If this is true of standardization in general, it is and will forever be not merely an aid in the progress of telecommunications, but also an indispensable necessity.

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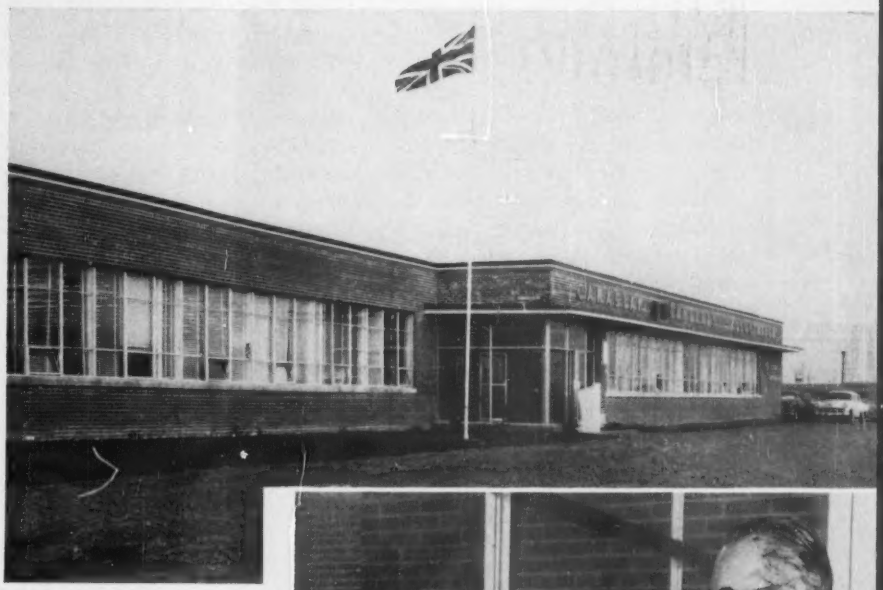
• • **The Fiftieth Annual Meeting** of the American Society of Refrigerating Engineers, at the Benjamin Franklin Hotel, Philadelphia, Pa., November 28-December 1, is featuring a series of informal conferences and forums. An Educational Engineering Conference and a Water Conservation Conference are also being featured.

• • **Fred A. Sweet** has been appointed to succeed the late Colonel W. R. McCaffrey as General Manager of the Canadian Standards Association. Mr Sweet has been Chief Technical Officer of the Association for the past 14 years. He is a graduate in civil engineering of the University of Toronto and a member of the Association of Professional Engineers of Ontario and the Engineering Institute of Canada.

Canadian Standards Group Opens New Laboratories



The new *electrical testing laboratories opened by the Canadian Standards Association near Toronto (above) are planned for expansion with growth of the Association's testing services. Dean R. E. Jamieson (left), CSA President and Dean of Engineering, McGill University, presents golden key to Gerry Moes, P. Eng., Manager, CSA Approvals Laboratories, at opening ceremony, October 25.*

New and modern laboratories have been opened by the Canadian Standards Association for testing electrical and oil-burning equipment for fire and shock hazards in accordance with Canadian Standards. The Association is responsible for approving and certifying all such equipment sold in Canada for the purpose of protecting the Canadian public. The new laboratories consist of a single-story laboratory and office building of 50,000 square feet, located in the township of Etobicoke, near Toronto. The Association has provided for future expansion by purchasing ten acres and designing the new building in such a way that its scope can be readily extended to provide for new testing programs or for growth of existing testing programs. The Association foresees the possibility that the laboratories may be asked to provide a certification service on other products in addition to electrical and oil-burning equipment.

Dean R. E. Jamieson, President of the Canadian Standards Association and Dean of Engineering of McGill University, officially opened the Laboratories October 25.

Masonry Requirements Up to Date

by J. W. McBURNEY

UP-TO-DATE requirements for masonry, suitable for use in building codes, in whole, or in part, or by reference, are available in the new edition of the American Standard Building Code Requirements for Masonry, just published. The code includes definitions, requirements for materials, allowable stresses, and general requirements for all types of masonry except reinforced masonry and thin veneers.

Prepared by ASA Sectional Committee A41 on Building Code Requirements and Good Practice Recommendations for Masonry[1] and approved by ASA as American Standard A41.1-1953, this new edition has been published by the National Bureau of Standards as NBS Miscellaneous Publication 211.

The first edition, consisting of approximately 18,000 copies, was approved and published in 1944, and had a wide acceptance. The majority of the municipal and model building codes written or revised since that date have followed A41.1-1944 in whole or in part, or by reference, for their masonry requirements.

This committee is sponsored by the National Bureau of Standards, and D. E. Parsons, Chief of the Bureau's Division of Building Technology, is chairman.

Among the differences between the 1944 edition and the present standard are the following:

(1) This standard has been completely rewritten with respect to arrangement. Requirements for allowable compressive stresses in unit masonry, which had been presented separately for each type of masonry in the 1944 standard, are now brought together in a single table. Information on permitted types of mortar is also presented in one table. Thickness of masonry is now considered in a single section which combines the requirements previously given in seven sections. In addition to rearrangement, much rewriting was done for improvement in clarity.

(2) With few exceptions, all masonry dimensions now given are "nominal."

The Author—*J. W. McBurney, National Bureau of Standards, is Secretary of ASA Sectional Committee A41 on Masonry.*

(3) References to specifications for materials are brought up to date. The 1944 standard had presented a specification for mortar. In the new edition this is replaced by reference to ASTM Tentative Specifications for Mortar for Unit Masonry (C270-52T). Since this specification includes requirements for a new mortar, intermediate in composition and strength between the 1944 A and B mortars, intermediate allowable compressive stresses for masonry using this mortar are given.

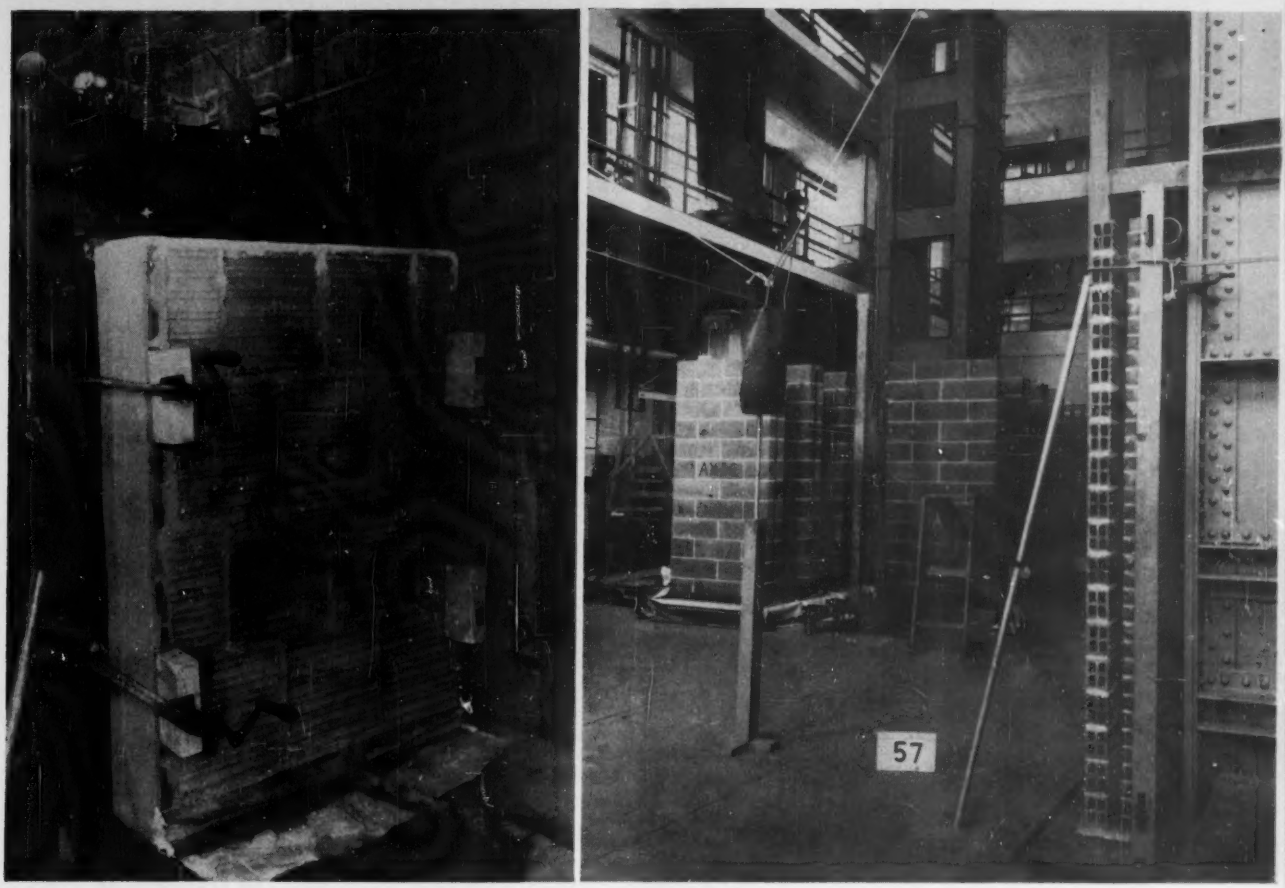
Tests of masonry *are carried out by the National Bureau of Standards on these wallettes in the NBS Exposure Test Plot. Among contributions of American Standard A41.1-1953 are discussion of effect of workmanship on strength of masonry and compilation of requirements for compressive stresses, types of mortar, and thickness of masonry.*

(4) The sections dealing with glass block masonry and cavity walls are enlarged and more detailed in comparison with the 1944 standard. Requirements are included for grouting as a method of bonding, and allowable compressive stresses are given for grouted masonry.

A widely quoted part of the 1944 standard was the Appendix. The new edition retains this feature and considerably enlarges and elaborates the material and presentation. This

[1] *The following organizations are represented on Committee A41:*
American Ceramic Society
American Institute of Architects
American Public Works Association
American Society of Civil Engineers
American Society for Testing Materials
Associated General Contractors of America, Inc
Bricklayers, Masons, and Plasterers International Union of America
Building Officials Conference of America
Building Trades Employers Association of the City of New York
The Finishing Lime Association of Ohio
Fire Protection Group
General Services Administration—Public Buildings Service
Housing and Home Finance Agency
National Association of Real Estate Boards
National Bureau of Standards
National Concrete Masonry Association
National Crushed Stone Association
National Lime Association
National Sand and Gravel Association
National Slag Association
New England Building Officials Conference
Pacific Coast Building Officials Conference
Portland Cement Association
Structural Clay Products Institute

This committee is sponsored by the National Bureau of Standards, and D. E. Parsons, Chief of the Bureau's Division of Building Technology, is chairman.



How to prevent *wet walls is discussed in detail in the new standard. Here (left) a structural clay tile wallette is undergoing test for water tightness. The brick-tile cavity wall (right) is prepared for test by impact loading using a 60-lb sandbag.*

Appendix consists of explanatory matter referring to various parts of the recommended code requirements and is presented as background material for users of the standard. A certain amount of material describing "good practice" is included.

Material such as the following is included in the 1953 Appendix:
(1) A discussion of requirements for mortar with reasons for the limitations on the use of certain types
(2) The background and history of the origin of the currently accepted allowable compressive stresses for brick masonry and a consideration of reasons for the omission of values for allowable tensile stresses in unit masonry

(3) A detailed discussion of the effect of workmanship on strength of masonry. In the same section are presented recommendations for minimizing the entrance of water into masonry (prevention of wet walls). This is introduced with the explanation that: "Although dampness in a structure is generally recognized as bad from the standpoint of comfort and health, and there is evidence that the durability of masonry is seriously affected by freezing and thawing and by leaching and crystallization of salts if much moisture is present, the subject is not included in codes, possibly on account of uncertainty as to the legal status and enforceability of such provisions. The building official, however, is sometimes blamed for leaking masonry on the theory that such conditions are the fault of lax inspection."
(4) Drawings illustrating recommended "good practice" are included. Among such illustrations are figures showing means for preventing entrance of water into basements and examples of bonding or anchorage of non-bearing walls.

(5) A list of 46 references is included as part of the Appendix.

In conclusion, it should be stated that A41.1-1953 represents a great deal of work by Committee A41. Active revision of the 1944 standard started in August, 1949, and four drafts were written and circulated before a consensus was reached.

Copies of American Standard Building Code Requirements for Masonry, A41.1-1953 (National Bureau of Standards Miscellaneous Publication 211), can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 20 cents each. Copies can also be obtained from the American Standards Association at ASA's minimum charge of 25 cents for single copies, or at 20 cents each for orders of two or more copies.

New Building for the Indian Standards Institution

Information Service of India, New York

India's Prime Minister *Sri Jawaharlal Nehru laid the foundation stone for the new building of the Indian Standards Institution at Nathura Road, New Delhi, in a ceremony August 21. At right is Sri T. T. Krishnamachari, Minister for Commerce and Industry, and President of the Institution.*

ON AUGUST 21 of this year, India took a step that in effect recognizes the important contributions that standardization is making to its growing industrialization. On that date Prime Minister Jawaharlal Nehru laid the cornerstone of a new building for the Indian Standards Institution. Also participating in the ceremony were T. T. Krishnamachari, Minister for Commerce and Industry and President of the Institution; the well-known Indian industrialist, Lala Shri Ram, chairman of the Institution's Executive Committee; and Dr Lal Verman, Director of the Institution and Vice-President of the International Organization for Standardization.

This indication of the strength of the standardization program in India was given wide recognition. The principal papers of India carried not only editorials and news stories quoting the Prime Minister and complimenting the Institution on its contributions to the country's economy, but also special supplements devoted to the work of the Institution. The *Hindustan Times*, the *Pioneer*, the *Indian Express*, the *Times of India*, and *The Searchlight* all carried special feature pages of ISI supplements.

The new building is located at a central site near Hardinge Bridge, New Delhi, and has been made possible by contributions from industry, trade, and the government.

Although not a government organization, the Indian Standards Institution works closely with the central government of India as well as with the local state governments. The central government made the new building possible by providing the land at a low price in comparison with its market value, and the state governments contributed directly to the building fund.

Organized in 1947, the Institution now has 420 standardization committees, has published 500 standards, and has some 700 more under way. It has 800 Sustaining Members as compared with 100 when it started. Its staff consists of 31 technical officers and 123 other staff members. Its financial support comes from members, including state governments and grants from the central government.

Commenting on the significance of ISI's work to the country's economy, Mr Krishnamachari said:

"Without standardization large-scale production becomes difficult and economies are lost. Standardi-

zation enables the producer to sell his goods all over the world, and without standards the flow of international trade is impeded. One of the difficulties in our export trade has been the lack of standards, with the result that goods have had to be shipped on consignment to be sold and paid for when they have been inspected in person by the buyer. As we develop standards and adhere to them, it should become possible for our goods to be sold to buyers thousands of miles away by the exchange of telegrams."

Standards are prepared by ISI through committees on which consumer, retailer, purchaser, and technologist all work together. The membership of these committees has increased from 600 to well over 4500.

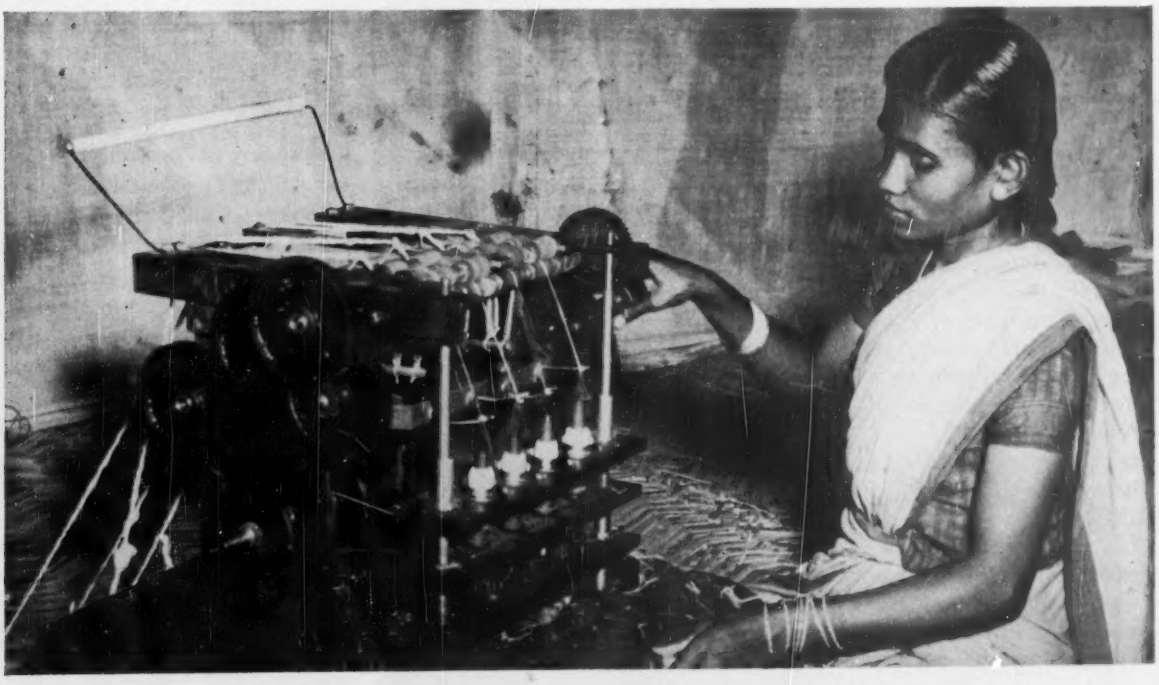
A step taken in 1952 that Mr Krishnamachari considers of great importance was the Certification Marks Act. This authorized the ISI to specify standard certification marks and to issue licenses to firms manufacturing their goods in conformity with the Indian Standards. "These certification marks serve as a guarantee of standard quality to the buyer and protect the interests of the producer of quality goods from unfair competition from those who produce cheap and undependable goods," Mr Krishnamachari declared.

The central government has adopted the policy of making all its purchases on the basis of Indian Standards wherever such standards exist, he explained. State governments and other authorities are also falling more and more in line with this policy. "As standards gain in popularity among ordinary consumers, the pace of industrial progress will be accelerated," Mr Krishnamachari commented.

The work of the Indian Standards Institution is done under the direction of four Councils, which supervise the Engineering Division; the Building Division; the Textile Division; and the Chemical Division. Plans are under way for an Agricultural and Food Products Division Council. The Institution operates in one field that is unique to India. This is what is known as the "cottage industries," and includes all home manufacture and small-scale industries. These small industries are being encouraged by the government of India which set up the All-India Cottage Industries Board in 1948. Dr Lal Verman, Director of ISI, presided over the Cottage Industries Conference at Lucknow in 1949 and made a special study of the manner in which the Indian Standards Institution could help in this vast field of production in India.

Effective standardization in the field of cottage industries presents rather complicated problems, since it is difficult to control the quality of products in terms of constructional materials, dimensions, performance, and finish. Facilities for testing the raw materials or the product, either in intermediate or final stages of manufacture, are often not available. However, the Indian Standards Institution has done valuable work in this field in a number of cases. For example, the specification for India's National Flag requires exclusive use of hand spun and hand woven fabrics. The Indian Standard Specification for the National Flag of India covers flags of different sizes. It was developed in collaboration with organizations such as the All-India

Woman worker *operates four-spindle spinning wheel at a stall of All-India Khadi and Village Industries Exhibition held in New Delhi. Spinning wheel, or Charkha, plays important role in India, has been improved in last 30 years.*



khadi and Village Industries Board and the Laboratories of the Directorate of Technical Development.

The Indian Standard for Handloom Carpets for Export gives information concerning types and qualities of yarn, depth of pile, fastness of dyes, etc, in order to assure a product that will be acceptable to the overseas market.

The Indian Standard for Grading of Wool for Export was formulated in collaboration with the Directorate of Marketing and Inspection. It forms the basis of rules for export and serves to check haphazard practices of grading.

Work on standards for towels, blankets, saris, and other handloom products has already started.

Production of lac and mica provides considerable employment in rural areas. As far as mica is concerned, this means a good deal to India, since the industry consists of a large number of small-scale units which extract mica and process it. The price obtained depends upon the correct classification and grading of processed mica. Three specifications have been formulated so far. In addition to its work on domestic standards, the Indian Standards Institution holds the secretariat for the international (ISO) committees on both lac and mica. The two Indian Standards on mica have formed the basis for the formulation of standards at the international level. Reports indicate that the most recent meetings of these committees in London this fall brought he work on international agreements near completion.

Sportsgoods are well established as a line of manufacture in the cottage and small-scale group of industries. Despite many difficulties in standardizing constructional details, methods of manufacture, and performance, standards covering shuttlecocks, cricket and hockey balls, footballs, and guts for rackets have been published by ISI.

ISI believes that standards already prepared for builders' hardware, such as hasps, hinges, bolts, and door handles, should assist small-scale industries in raising the quality of their products. In the case of "Aligarh-type" padlocks (made in the Province of Aligarh), a detailed design standard has been prepared, giving full constructional details and requirements for "unpickability." This standard serves as the basis for quality marking under the certification plan approved by the government.

In the field of large-scale industry, India has been using modern statistical methods of quality control since immediately after the war. The methods adopted were very similar to, and are actually based upon, the American War Standards developed through the War Procedures of the American Standards Association and still in use in this country.

A great deal of work is going on through standards to raise the quality of steel produced in India and to establish recognized national codes of good practice for the design, fabrication, and erection of structures. A Steel Economy Section of ISI is carrying on research to help in conservation of steel.

ISI is also helping to bring about standard procedures for efficient and safe methods of welding.

Standard methods for evaluating the physical and chemical characteristics of fibers and their products are considered by ISI to be one of its outstanding contributions to the textile industry and thus to the economy of India. The ISI committees that formulate the standards take care that the conditions of tests are such that test results of competitive products can be compared after expressing the results in terms of common units.

Standardization is playing an important part in plans (now under way) for dams that are to be built for the River Valley projects now being undertaken for the development of India. And a start has been made in use of the 4-inch module for planning modular building components that fit together at the building site in order to bring about speedier and more economical construction of houses, factories, schools, and other buildings badly needed in India.

These are only a few of the many standardization projects being carried on by the Indian Standards Institution for the purpose of strengthening the economy of India.

Erection of the new headquarters for the Indian Standards Institution is proof of the fact that India's industries are growing and that the country is forging ahead and gaining in strength, Prime Minister Nehru told the audience when he laid the cornerstone for the new building.

WORK FOR CONSISTENT RESULTS IN MICROPHONE CALIBRATION

A new standard has just been published that should help to assure consistent results in the laboratory calibration of microphones. This American Standard Method for the Free-Field Secondary Calibration of Microphones, Z24.11-1954, outlines acceptable procedures for calibration and establishes uniform terminology for expressing the performance characteristics. Conformity to the standard should assure compatibility of calibration by different laboratories.

This is the latest in a series of standards prepared by ASA Sectional Committee Z24 on Acoustics, Vibration, and Mechanical Shock, under the sponsorship of the Acoustical Society of America. The draft was prepared by the following subcommittee: Cecil J. Burbank, U.S. Navy Electronics Laboratory (Chairman); L. J. Anderson, RCA Victor; B. B. Bauer, Shure Brothers, Inc; A. P. G. Peterson, General Radio Company; F. F. Romanow, Bell Telephone Laboratories; W. Wather-Dunn, Air Force Cambridge Research Center; and P. J. Weber, Department of Navy, Bureau of Ships.

Copies of American Standard Method for the Free-Field Secondary Calibration of Microphones, Z24.11-1954, can be obtained at 50 cents each.

CHANGES PROPOSED FOR SPLINE STANDARDS

by G. L. McCain

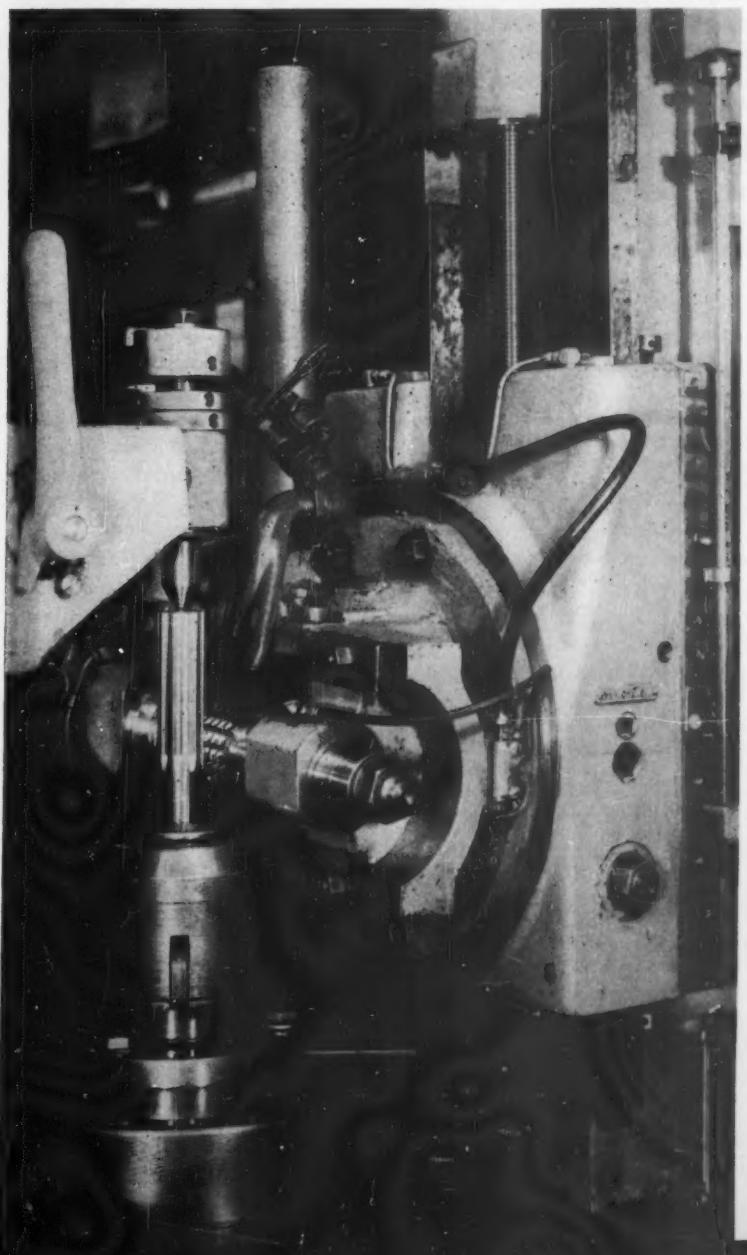
EXPERIENCE with involute splines has, over a period of years, indicated the need for a few changes in the current edition of American Standard Involute Splines, Side Bearing, B5.15-1950, to obtain economy and to incorporate into the standard a better system of tolerances and fits, in keeping with modern production and gaging practice.

During the few years between 1941 and 1945, the need for a standard was accented by World War II demands on industry, and the first standard (Involute Splines, Side Bearing), issued in 1946, was based on practices developed in production and inspection of gears. In this first standard, the addendum and dedendum were made to agree with the practice on stub pitches for gears. Each was made equal to the reciprocal of the stub pitch, with the result that, on major diameter fits, the external member required chamfering to clear the fillet of the internal member. For side bearing fits, the addendum of the external member was reduced to clear the fillet, resulting in some loss of contact height.

Between 1946 and 1949 the aircraft industries took a very active interest in the standard, and the subcommittee was expanded to include members from both the aircraft engine group and the airframe group on the West Coast. The aircraft engine group had developed a standard which had no recommended fits and nothing except a flat machining tolerance for defining the limits for inspection. In 1946 a new standard was issued entitled American Standard Gear Tolerances and Inspection, B6.6-1946, which supplied a realistic approach for setting up maximum permissible variations of profile, tooth spacing, lead, and out-of-roundness. As a result of three years of meetings, a revision of the American Standard, Involute Splines, Side Bearing, B5.15-1946, was finally approved, incorporating three classes of fits on the major diameter, the minor diameter, and the sides of the teeth. The minor diameter fit was a carry-over of the old practice, on straight parallel-sided splines, of grinding the internal minor diameter to fit the form ground minor diameter of the ex-

Hobbing *an Involute Spline.*

Gould & Eberhardt



The Author—*Mr McCain, chairman of Subcommittee 1 of Sectional Committee B5 on Small Tools and Machine Tool Elements, is with the Engineering Division of the Chrysler Corporation, Detroit.*

He is a member of the ASA Standards Council, representing the Automobile Manufacturers Association, and also represents the AMA and the Society of Automotive Engineers on a number of sectional committees.

Mr McCain reports that the current editions of the American Standards on splines, which are being used extensively throughout industry, are now being studied to consider necessary revisions. The subcommittee invites comments and suggestions.

ternal splined member. The 1950 edition, which resulted from this work, also included extra dedendum depth for the flat root type, so as to make all types interchangeable, except that a flat root internal was required for a major diameter fit.

Interchangeability between flat root and fillet root types has not been so important as it was at first considered, since different tools are required for each. The subcommittee has recently decided to drop the interchangeable feature and make each type to meet its own requirements. This means that the flat root type could be changed back to the 1946 dedendum because of its economy of broaching, and some bearing contact could be sacrificed, because in automotive and machine tool applications, the loading is not so critical as in aircraft. Experience has shown also that loose and press fits are seldom, if ever, used in major diameter fits, and that when press fits are used on the sides of the teeth, they are usually so critical that no standard could fit the many conditions existing. For these reasons then, the following decisions have been made by the subcommittee:

1. To delete the minor diameter fits
2. For the flat root only, to change the dedendum of the internal to $1/P_s$ (reciprocal of the stub pitch). This carries with it the decision to modify the major diameter of the external as needed.
3. To apply form clearance for both external and internal
4. To delete specifications for flat root fillet radius and to tabulate values for reference purposes
5. To delete the loose and press fits on the major diameter (Class I and III)
6. To delete the press fit on the sides of the teeth (Class C)
7. To change definitions and symbols to agree, where possible, with latest standard on nomenclature
8. To delete the use of flatted pins and to use round pins of larger diameter, as in the Gaging Standard
9. To incorporate with the revision the standard on spline gaging (current edition, American Standard Involute Spline and Serration Gages and Gaging, B5.31-1953) with revisions which may be necessary because of the foregoing changes.
10. To make pin measurements optional and reference them, because with good gaging practice, the space width and tooth thickness are the required specifications. (Tables of pin measurements will be included in the standard.)

In addition to the decisions listed, some consideration is being given to revision of the involute serration standard (current edition, American Standard B5.31-1953), paralleling those being considered for the spline standard. Since the gaging standard covers both splines and serrations, it might simplify the over-all problem to include the serrations with the splines and gaging into one standard. A second method would be to make the serration standard, with its gaging, a separate standard. This would involve some duplication, but might prevent confusion.

The most important of the revisions being studied concerns machining tolerances, error allowances, and fitting clearances. Data from many users are being studied to determine tendencies of current manufacturing and inspection. The type of gaging required for part inspection is also being listed and studied. Since the committee will make decisions based on these data, the more we receive, the more conclusive our decisions will be.

Appropriate error allowances for broached internal splines are being studied because the allowances in the 1950 issue of the standard are greater than needed for broached parts. Some studies are being made of the tolerances of Class 4 of the gear inspection standard, as they pertain more to broached parts than do those in Class 3, which are now being used.

A meeting of the subcommittee was held at the Edgewater Beach Hotel, Chicago, under the auspices of the American Gear Manufacturers Association, on October 25, 1954. Subcommittee reports were presented, and it is hoped that a new draft of the proposed revision can be prepared for the December 1, 1954 meeting of Subcommittee 13 of Sectional Committee B5 in New York. The subcommittee now working on the revisions is also a subcommittee of the Society of Automotive Engineers' Parts and Fittings Committee. Therefore, the revisions when finally completed will be submitted for simultaneous approval to both the SAE committee and the ASA Sectional Committee.

How Useful i

"Modular Measure" is the new term now being used for that system of coordinating a designer's dimensions for a building with the actual unit sizes of building materials formerly known as Modular Coordination. Now, Modular Measure is in the news. On December 9 a conference will be conducted on this subject by the Building Research Institute of the National Academy of Sciences. The Bricklayers, Masons, and Plasterers International Union has become the first building trades union to endorse the principle officially. Furthermore, three individuals who have rendered outstanding service to this project were given awards at the National Conference on Standards in New York, November 15. (The story of the awards will be published in THE MAGAZINE OF STANDARDS, January, 1955.)

"Modular Measure—Its Value in Contemporary Buildings" is the full title of the December 9th meeting. It is sponsored by eight national organizations, of which the American Standards Association is one. The others are: American Institute of Architects; Associated General Contractors of America; Association of Collegiate Schools of Architecture; Building Research Advisory Board; Chamber of Commerce of the United States; National Association of Home Builders; The Producers' Council.

The conference will attempt to evaluate the performance of Modular Measure to date and to indicate new ways by which this system can help reduce the price paid for buildings by the American people.

Participants in the Conference will include general contractors, manufacturers, builders, and architects. All who are interested are invited to attend. The nominal admission fee will include a copy of the full conference proceedings.

"Modular Measure"?

Briefly, the modular method adopts a 4-inch unit as the basic module for the design of structures and the manufacture of materials. The aim is to conserve materials and manpower and to permit fast and efficient operations. ASA Sectional Committee A62 was responsible for developing the American Standard Basis for the Coordination of Dimensions of Building Materials and Equipment, A62.1-1945. Three other standards have already been completed, on the Basis for the Coordination of Masonry, A62.2-1945; Sizes of Clay and Concrete Modular Masonry Units, A62.3-1946; and Sizes of Clay Flue Linings, A62.4-1947. A fifth standard on dimensions of kitchen equipment is now near completion. The American Institute of Architects and the Producers' Council are sponsors of Committee A62 under the procedure of the American Standards Association.

Modular masonry units are already widely available in most sections of the country and have proved to be practical and efficient, the Bricklayers, Masons, and Plasterers International Union declared when it officially endorsed the principle of Modular Measure. This action was taken at the 22nd biennial convention of the Union held recently in Cleveland. In a resolution unanimously adopted by the delegates, the union declared that it took the action because it is "at all times desirous of encouraging progress in the building industry, of reducing the cost of construction, and thereby expanding the market for building."

In announcing this action, Harry C. Bates, the Union's president, declared, "The BM & PIU is pleased to give its blessing to this progressive architectural and construction principle which has already proved itself to be a money-saving method which will enlarge the building market."

MODULAR MEASURE—ITS VALUE IN CONTEMPORARY BUILDING

Research Conference conducted by the Building Research Institute, National Academy of Sciences, at the Academy, 2101 Constitution Avenue, Washington, D. C., December 9, 1954.

9:30 A.M. THE PLACE OF MODULAR MEASURE IN THE BUILDING PROCESS.

EVOLUTION OF MODULAR COORDINATION. *Max H. Foley,* Voorhees, Walker, Foley & Smith, architects and engineers, New York, N. Y.

How Modular Measure was brought into being under the American Standards Association, what the system is, how it works.

CONTEMPORARY BUILDING TECHNOLOGY. *Edward X. Tuttle,* Vice-President, Giffels & Vallet, Inc, L. Rossetti, associated engineers and architects, Detroit, Mich.

The impact on the design process of present trends such as prefabrication of components, field-work simplification, etc, and the part rational dimensioning can play in facilitating building progress.

10:15 A.M. THE VALUE OF MODULAR MEASURE IN PRACTICE — REPORTS BY THOSE NOW USING IT.

CONTRACTORS. *J. P. Caldwell,* Vice-President, J. A. Jones Construction Co, Charlotte N. C., and *James E. Coombs,* President, Baker & Coombs, general contractors, Morgantown, W. Va.

ARCHITECTS. *John R. Magney* of Magney, Tusler & Setter, Minneapolis architects and engineers, and *Gannett Herwig,* La Pierre, Litchfield & Partners, New York, N.Y.

PRODUCERS. *C. T. Bridgeman,* Director, Goodwin Affiliated Companies, Des Moines, Ia; and *R. D. Burnham,* illuminating engineer, The F. W. Wakefield Brass Co.

Speakers will report on their own experiences with Modular Measure and will then open a general discussion for audience participation.

2:00 P.M. POTENTIALITIES YET TO BE EXPLORED.

BUILDING MATERIALS. LIGHT STRUCTURAL STEEL: *W. S. Kinne, Jr,* Professor of Architecture, University of Illinois. INTEGRATED CEILINGS: *R. D. Burnham,* The F. W. Wakefield Brass Co, Vermilion, Ohio. EXTERIOR WALL-PANEL SYSTEMS: *Philip Will, Jr,* Perkins & Will, Chicago architects and engineers. RESIDENTIAL BUILDING COMPONENTS: *W. A. Simms,* Dayton, Ohio, merchant builder.

PUTTING MODULAR MEASURE TO WORK. *E. G. Gavin,* Editor, *American Builder.*

4:30 P.M. SUMMARY.

WHAT MODULAR MEASURE OFFERS THE DESIGNER. *Norman J. Schlossman,* Loebl, Schlossman & Bennett, Chicago architects.

WHAT MODULAR MEASURE OFFERS THE MANUFACTURER. *William Gillett,* Vice-President, Detroit Steel Products Co, and President-elect, The Producers' Council.

Exhibit Features Noise Standards

THE danger of exposure to noise and the ways in which American Standards can be used by industry to prevent loss as a result of noise were the subject of an exhibit at the Fall Manufacturing Conference of the American Management Association, Plaza Hotel, New York, October 10-12. Some 500 factory superintendents and managers attended the meeting.

In addition to a general exhibit panel telling about the work of Sectional Committee Z24 on Acoustics, exhibits of typical equipment that meet the requirements of American Standards were also shown. The General Radio Company showed its sound level meter, which operates in accordance with the American Standard, Sound Level Meters for Measurement of Noise and other Sounds, Z24.3-1944, and its octave-band filter set, in accordance with American Standard Specification for Octave-Band Filter Set for the Analysis of Noise and other Sounds, Z24.10-1953. Posters showed how the equipment is used to check the noise in a factory. The Sonotone Corporation showed its screening audiometer, in accordance with the American Standard Specification for Pure-Tone Audiometers for Screening Purposes, Z24.12-1952, for checking the hearing of individuals.

Above, the main panel calls attention to the noise problem and what Committee Z24 is doing about it.

Center, the General Radio Company's exhibit. Studying the exhibit are (left to right) R. E. Brooker, Sears Roebuck & Co, Chicago; F. H. Wells, Aircraft Marine Products, Inc, Harrisburg, Pa; Robert E. Ayre, Brown Forman Distillery Corp, Louisville, Ky. Staff attendant is Miss Dorothy Denton, Publicity Assistant, American Standards Association.

Below, Daniel P. Cady, The Esterbrook Pen Co, Camden, N. J., checks his hearing with the Sonotone Corporation's screening audiometer, while Robert T. Foote, Red Star Yeast and Products Co, Milwaukee (left), and Leonard L. Rosenfield, Jerrold Electronics Corp, Philadelphia (right) look on. Demonstrating the equipment are Mrs Paula Gruver, American Standards Association (left), and Miss Ruth Kellogg, American Management Association (at audiometer).

New Standards for Low Voltage Air Circuit Breakers

by V. L. Cox

The Author: *Mr Cox is manager of laboratories, Switchgear and Control Division, General Electric Company, Philadelphia. He has been chairman of Sectional Committee C37 on Power Switchgear since 1951.*

The Subcommittee on Low Voltage Air Circuit Breakers, which is responsible for development of the standards discussed in this article, is under the chairmanship of B. M. Carothers. Mr Carothers is with the Union Electric Company of Missouri.

The work on low voltage circuit breakers is part of a general program which has already resulted in completion of ten American Standards, in addition to the three new standards. Eight of the already existing standards provide preferred ratings, interrupting rating factors, control voltages, test code, guide specifications, and similar standards for power circuit breakers. The other two are general standards covering relays associated with electric power apparatus and automatic station control, supervisory, and telemetering equipments.

•

Esso Standard Oil Co, and General Electric

Standard air circuit breakers *in metal-enclosed switchgear of unit substation supplying power for lighting and machinery for modern office building.*

MUCH publicized "Adequate Wiring" campaigns, designed to bring the power distribution systems of our homes into line with the increased use of electrical appliances, are familiar to all of us. Commercial and industrial establishments have likewise greatly increased their use of electricity, but in general they have "beefed up" their power distribution systems to carry the load adequately. However, this process has created a problem not encountered in the modernization of home wiring.

As factories and commercial establishments have expanded, old power systems have been extended by adding transformer capacity, and electric utility systems have added generating capacity and heavier lines. All of this means just one thing — much higher short circuit currents when trouble occurs in the factory's electrical equipment. It is becoming increasingly apparent to engineers responsible for these extensions that protective devices used in original installations are frequently inadequate to interrupt safely the higher short circuit currents, and that they should be replaced with devices having much higher short circuit interrupting ability. However, many engineers, while realizing that the problem exists, are not familiar with the methods of determining the short circuit potentialities of their systems or with the efficacy of the many available protective devices in coping with them.

Among the necessary tools which the engineer must have to accomplish this task are standards by which he may judge the validity of his calculations of short circuit current and the adequacy of the devices he selects to cope with them. Usually, the most important of the devices he will need in order to design a safe and adequate system is the large air circuit breaker which is the subject of three recently issued American Standards:

Low Voltage Air Circuit Breakers (including Application Guide), C37.13-1954

Test Code for Low Voltage Air Circuit Breakers, C37.14-1954

Rated Control Voltages and their Ranges for Low Voltage Air Circuit Breakers, C37.15-1954

A fourth standard now in preparation by ASA Subcommittee on Low Voltage Air Circuit Breakers is "Preferred Standard Ratings of Low Voltage Air Circuit Breakers."

This group of standards should be in the library of every engineer charged with responsibility for the design of low voltage power distribution facilities of an industrial plant, electric utility installation, or large commercial building. The Application Guide in C37.13 will acquaint him with a simplified method, accepted throughout the electrical industry, by means of which he can quickly determine, from known data and with sufficient accuracy for normal applications, the short circuit currents which his system can develop. The standards will acquaint him with the terminology of the circuit breaker art and indicate the conditions which he

must consider in selecting breakers and the tests to which the breakers he will select should be subjected by the manufacturer. The listing of preferred standard ratings will, when issued, guide him in selecting breakers to meet his needs, which manufacturers will be prepared to supply in a minimum of time and at lowest cost.

These standards will also show the engineer what information it is necessary to include in inquiries to manufacturers and will provide an accepted basis for evaluating their offerings. They lay the basis for a clear understanding between the purchaser and manufacturer as to what the former needs on the one hand and what the latter can supply on the other.

These standards, if widely used, will do a great deal to promote the much needed improvement in the country's industrial power systems by making it easy for plant engineers to plan such improvements on a sound engineering and economic basis.

To electrical manufacturers, the new standards point the way to realistic planning of designs and manufacturing facilities to meet the demand for circuit breakers which a widespread program of distribution system improvement will create. The present $10,000,000 annual production of large air circuit breakers will almost certainly be greatly increased if industrial power users are awakened to the need for improvement in their systems and to the advantages in increased safety and continuity of production which will result therefrom.

As with all American Standards, these Air Circuit Breaker standards are the result of very close cooperation between the makers and users of the product. They are founded on long experience and on a very careful consideration of the latest developments in the fields of design and application. Much credit is due the members of the ASA Subcommittee on Large Air Circuit Breakers and the many individuals who aided them in preparing these important standards.

FROM OTHER

621.9 TOOLS. MACHINE TOOLS

Czechoslovakia (CSN)

12 standards for different types of mill holders, sockets and sleeves	CSN 241400, -241402, -241470/74, -241480/84
Tolerances for tapered shanks and dies, series:	CSN 22 3000...
34 standards for different taps and dies, series:	CSN 22 3000
4 standards wire drawing dies	CSN 22 7541, -7551, -7561, -7571
31 standards for Morse taper shank, sleeves etc, series:	CSN 22 0400...
22 standards for different reamers, series:	CSN 22 1400...

Finland (SFS)

Squares for tool shanks	B. III. 1

Germany (DNA)

Milling cutter for acme screw thread	DIN 1893
Wire-mesh, square, for sieves	DIN 4189
Milling cutter with staggered teeth	DIN 1891
Twin-type milling cutter	DIN 1892
Mlling cutters for screw wrench opening	DIN 849
Bolts for crushing machines	DIN 792
Stamping press, different types of plungers	DIN 9866, B1.1/3
Circular saws for wood	DIN 8809
Three-jaw chuck	DIN 6350
Star-knob	DIN 6335
Spindle head	DIN 55021/22
5 standards for punch press and accessories	DIN 9867, B1.1/5
Set of two taps, Whitworth gas thread 1/8 in. to 4 in.	DIN 353

India (ISI)

Blacksmith's anvils, cast steel	IS:510

Italy (UNI)

6 standards for nomenclature and definition of single-point lathe tools	UNI 3401/06

Netherlands (HCNN)

Directon of movement of cranks and handwheels of lathes	V 1939
Carbide-tipped side cutting rougher	V 1976

Poland (PKN)

5 standards for different lathe cutting tools	PN M-58760, M-58676/79

Sweden (SIS)

Milling cutters, general survey	SMS 899
Hard metal tips of cutters nominal sizes	SMS 956
3 standards for different forms of cutters	SMS 1765, 1768/69
Inside turning tool holder	SMS 1770
12 standards for hammers used for different purposes	SMS 1596/1600, 1602/03, 1605/09

United Kingdom (BSI)

Augers and auger bits	BS 2054:1953
Gear hobbing machines for turbines and similar drives	BS 1498:1954

629.13 AIRCRAFT ENGINEERING

Netherlands (HCNN)

Aircraft wire screen	V 1853
Aircraft lockwire	V 1880
Aircraft safety wire	V 1881
Ground air-conditioning connections on aircraft	V 1802
Gravity filling orifices on aircraft	V 1805
Toilet flushing and draining connection on aircraft	V 1807
Ground jacking pad on aircraft	V 1808

Spain (IRATRA)

Different commands of airplane rudder, elevator, etc	UNE 28009
Wood used in aircrafts	UNE 28010/11

United Kingdom (BSI)

Standard specification for cadmium-plated hexagonal headed steel bolts (B.A. and B.S.F. threads and close tolerance shanks) for aircraft	A.59, March 1954
Standard specification for cadmium-plated shear bolts (B.S.F. threads) for aircraft	A.60, March 1954
Standard specification for cadmium-plated steel bolts (unified hexagons, UNF threads and close tolerance shanks) for aircraft	A.111, March 1954
Standard specification for 90° countersunk head steel bolts (UNF threads) for aircraft	A.119, March 1954
Standard specification for 90° countersunk head corrosion-resisting steel bolts (UNF threads) for aircraft	A.120, March 1954
Standard specification for 90° countersunk head aluminum alloy bolts (UNF threads) for aircraft	A.121, March 1954

631.3 AGRICULTURAL TOOLS AND MACHINERY

Czechoslovakia (CSN)

Driver's seat	CSN 47 0370/71
Harrows, terminology	CSN 47 0515
Disk ploughs	CSN 47 0732
14 standards for different parts of threshing machines	CSN 02 1361, -42 5910/12, -47 0340...
23 standards for different purpose shovels, series:	CSN 23 7110...

Germany (DNA)

Wheel center distance of potato planters	DIN 11166
Drainage hoe	DIN 11565
Pneumatic wheel center distance of agricultural tractor	DIN 11740
3 standards for drain ditch spades	DIN 11562, -11555/56
4 standards for different types of spades	DIN 11550/51, 11553, 11566

Poland (PKN)

Sheaves for harvesting machines	PN R-55094

Portugal (IGPAI)

Basic plan for establishment of standards for agricultural machinery	NP-29

Sweden (SIS)

Spikes	SMS 1593
Cambridge rollers	SIS 35 33 01
Smooth and toothed disks for Cambridge rollers	SIS 35 33 03

United Kingdom (BSI)

Classified glossary of terms relating to agricultural machinery and implements	BS 2468:1954

634 FRUIT CULTIVATION

Czechoslovakia (CSN)

Fruits and seeds of different species of trees	CSN 48-2111

COUNTRIES

637 PRODUCE FROM DOMESTIC ANIMALS

Czechoslovakia (CSN)

Ice cream — CSN 56 2109
Pot cheese — CSN 57 1136
4 standards for different grades of meat — CSN 57 6110,-6112, -6114,-6120

France (AFNOR)

Physical and chemical analysis of milk — FD V 04-200
14 standards (in one folder) for various physical and chemical tests of milk and milk products — NF V 04-202/215

New Zealand (NZSS)

Standard specification for the treatment, grading, and classification of hides, yearlings, and calfskins — NZSS 161, Nov 1951

United Kingdom (BSI)

Annatto for dairy products — BS 2450:1954
Methods for the chemical analysis of ice cream — BS 2472:1954

643.3/.35 KITCHEN EQUIPMENT AND UTENSILS

Czechoslovakia (CSN)

4 standards for domestic ovens — CSN 15 1030, -1440,-1425,-1455

Germany (DNA)

Kitchen ware for electric stoves — DIN 44904

Sweden (SIS)

Aluminum and stainless steel pots — SMS 1563/66

645 FURNITURE

Czechoslovakia (CSN)

10 standards for beds, chairs, cupboards, etc — CSN 90 0101/03, -0105/11

France (AFNOR)

Minimum requirements for solid and veneered furniture — NF D 60-311

New Zealand (NZSS)

Standard specification for household furniture — NZSS 468, Nov 1952

United Kingdom (BSI)

Domestic furniture: Upholstered furniture — BS 1960:Part 5:1954

651.4/.7 OFFICE ADMINISTRATION

Czechoslovakia (CSN)

Paper sizes according to "A" series — CSN 01 0402

Netherlands (HCNN)

Rules for drawing documents — V 977

Portugal (IGPAI)

Standard letterheads, size A4 — NP-5
Standard letterhead, short size A5 — NP-8
Standard pads, different size — NP-11
Window envelopes — NP-14
Standard sizes of index cards — NP-10
Pamphlet binders and boxes — NP-24
Standard sizes of the "A" series and their application — NP-4
Letterheads size A4 — NP-6
Envelopes, postal cards, etc — NP-7,-13,-15
Paper sizes, "A" series — NP-17
Form and size of air mail letters — NP-20

652.3 TYPEWRITING

Netherlands (HCNN)

Rules for typing manuscripts — N 1394

662.6/.9 FUEL INDUSTRY. INDUSTRIAL HEATING

Germany (DNA)

Determination of nitrogen content in solid fuel — DIN 51722
6 standards for different types of coke manufacturing implement — DIN 23201/02,-23211/14

664 PREPARATION AND PRESERVATION OF SOLID FOODSTUFFS

Czechoslovakia (CSN)

109 standards for different bakery and confectionery products — CSN 56 1910/21, -2010/19 -2220/2306

India (ISI)

Grading for vacuum pan sugar — IS:498

Spain (IRATRA)

Preserved codfish — UNE 34801

665.45 ASPHALT INDUSTRY

Czechoslovakia (CSN)

Determination of number — CSN 65 6187
Acidity test — CSN 65 6188
Determination of density of mineral lubricants and motor fuels — CSN 65 6199
7 different tests of petroleum products — CSN 65 6211/17
5 different tests of mineral lubricants — CSN 65 6310/14
6 different tests of bituminous products — CSN 65 7059/63,-7080
Coal tar — CSN 65 8010
Three-cresol — CSN 65 8030

India (ISI)

Glossary of terms relating to bitumen and tar — IS:334
Cutback bitumen, Digboi type — IS:454

667.6/.8 PAINTS, VARNISHES, LACQUERS, ETC

Czechoslovakia (CSN)

Paint and lacquer materials. Terminology, definition, classification — CSN 67 3003
Czechoslovakian ochre, pigment — CSN 67 1411
Lead chromate, pigment — CSN 67 1412
Zinc chromate, pigment — CSN 67 1422
Book of color chips — CSN 67 3067 Supplement
3 standards for pigments — CSN 67 0520/22
2 standards for lacquers — CSN 67 3011,-3067
Electrical insulating lacquers — CSN 67 6020

Germany (DNA)

Testing paints for speed of drying — DIN 53150
Testing paint for flexibility — DIN 53152
Testing paint for volatility of solvent — DIN 53170
Heater for priming coat paint — DIN 55900
Siccatives — DIN 55901

New Zealand (NZSS)

Standard specification for ready mixed paint for undercoats and finishing coats (white and light tints) for use on exterior woodwork — NZSS 521, Nov 1952
Standard specification for school requisites: Part 3, Water color paints — NZSS 660, Part 3, Nov 1952
Standard specification for ready mixed paint for priming coats for use on exterior woodwork (excluding totara) — NZSS 1056, Nov 1952

Spain (IRATRA)

Classification of pigments used in paint and varnish industries — UNE 48101
Zinc white pigment. Characteristics, testing — UNE 48036

669 METALLURGY

Austria (ONA)

Gray cast iron — ÖNORM M 3191

Belgium (IBN)

Copper and copper alloys of common use dimensions and tolerances of rounds, squares, hexagons, strips and sheets — NBN 268

Czechoslovakia (CSN)

4 grades of copper — CSN 42 3001,-3003, -3005,-3009
7 grades of bronze — CSN 42 3011,-3013,-3016, -3018,-3042,-3064/65
3 standards for tombac — CSN 42 3201/03
13 grades of brass — CSN 42 3210,-3212/14, -3221/23,-3231,-3234,-3236, -3239,-3242,-3256
Elongation testing apparatus — CSN 42 0344/45
Erichson drawn cup test method — CSN 42 0406
Compression test — CSN 42 0415
29 standards for different grades of structural steels, series: — CSN 41004...
5 standards for cold rolled steel bands, series: — CSN 42 0107...

Poland (PKN)

Aluminum and its alloys, chemical analysis of — PN H-04701
Bearing metal, chemical analysis of — PN H-04811
Zinc alloy, type ZNAL — PN H-87101

Portugal (IGPAI)

Determination of copper content in aluminum — NP-32

South Africa (SABS)

Standard specification for dimensions and properties of rolled carbon steel structural sections — SABS 222-1952

744 TECHNICAL DRAWINGS

Netherlands (HCNN)

Indication of building parts on drawing 1:100 and 1:200 — N 114
Symbols for surface finish — V 630 B
Indication of hydraulic work on drawings — V 1330

United Kingdom (BSI)

Protractors for drawing office use — BS 2457:1954
French curves for drawing office use — BS 2458:1954
Set squares for drawing office use — BS 2459:1954

77 PHOTOGRAPHY

Canada (CSA)

Tentative specification covering 16-mm optical sound film projector class B (for industrial and educational use) — CSA Z7.1.1.17-1954

Germany (DNA)

Camera lenses, stops, focal length, inscriptions, distance scale — DIN 4522

United Kingdom (BSI)

Identity photographs — BS 967:1954
Dimensions of photographic processing tanks — BS 2476:1954

RECENT PUBLICATIONS RECEIVED FROM ASA MEMBERS

American Society for Testing Materials

1916 Race Street, Philadelphia 3, Pa.

• **ASTM Standards on Copper and Copper Alloys,** September, 1954, 600 pp, 6 x 9. Heavy paper cover, $5.00; cloth cover, $5.65.

Brings together in compact, readily usable form all of the ASTM Standards pertaining to copper and copper alloys developed by ASTM Committee B-5 on Copper and Copper Alloys, Cast and Wrought, and related standards from other committees of the ASTM.

This edition includes in their latest form 123 ASTM standards, including 108 specifications; 10 test methods; 2 classifications; 2 recommended practices. In this special compilation, 50 of the specifications included in the earlier edition have been revised and 8 of the standards are new.

Standards cover: specifications for electrical conductors; plate, sheet, rolled bar, and strip; rod, bar, and shapes; non-ferrous metals; wire; pipe and tube; ingot; sand and die castings; filler metal; and methods of test for copper and copper-alloys.

An extensive Index is included to provide a ready reference.

Symposium on Diesel Fuels (STP No. 167), September, 1954, 56 pp, 6 x 9. $1.50.

The papers in this symposium were presented at a meeting of ASTM Committee D-2 on Petroleum Products and Lubricants held in Philadelphia, February 1954. Of the nine papers presented in this Symposium, eight papers were prepared covering the diesel fuel supply and demand outlook, and the various problems associated with the procurement and usage of diesel fuels, while one paper is a review of fuel specification requirements. Also, the Tentative Classification of Diesel Fuel Oils (D975-53T) is included.

• **Symposium on Temperature Stability of Electrical Insulating Materials** (STP No. 161), October, 1954, 141 pp, 6 x 9. $2.75.

Sponsored by ASTM Committee D-9 on Electrical Insulating Materials, this Symposium was presented at the 57th Annual Meeting of the American Society for Testing Materials in Chicago in June, 1954.

In view of the rapid development of new insulating materials in recent years, it has become increasingly apparent that test methods and standards are needed as guides for determining the thermal stability of insulating materials. This Symposium is an important part of the effort in this direction.

• **ASTM Manual on Industrial Water** (STP No. 148-A). Second printing, September, 1954, 430 pp, 6 x 9. Blue cloth binding. $5.00.

This Manual, now in its second printing, offers a broad discussion on the nature and uses of industrial water, plus up-to-date test methods and specifications developed by leading authorities in the field.

Included in this Manual are the various specifications, sampling methods, definitions, and test methods that have been standardized by the Society through the work of its Committee D-19. Methods are listed for sampling; analysis; reporting results; and testing.

New material includes 10 methods for: chemical oxygen demand (dichromate oxygen demand) of industrial waste water; chlorine requirement of industrial water and industrial waste water; in industrial water (residual chlorine — nitrate-ion — sulfite-ion); in industrial waste water (odor — oil matter — pH — sulfides); also determination of thickness of internal deposits on tabular heat exchange surfaces; and one scheme for analysis of industrial water and industrial waste water.

American Welding Society

33 West 39th Street, New York 18, N. Y.

• **Tentative Specifications for Aluminum and Alumunum-Alloy Welding Rods and Bare Electrodes** (AWS A5.10; ASTM B285), August, 1954. 25 cents.

Issued jointly by AWS and the American Society for Testing Materials, these specifications standardize, for the first time, filler metal for inert-gas metal-arc welding aluminum. Twenty-two classifications of filler metal, all the commonly used aluminum and aluminum-alloy filler metals, are established by these specifications.

National Electrical Manufacturing Association

155East 44th St., New York 17, N. Y.

• **Approval of Electrical Equipment** by CSA. NEMA Bulletin No. 54, Multilithed.

This Bulletin presents information for those interested in the activities of the Canadian Standards Association (CSA).

Society of Motion Picture and Television Engineers

55 W. 42nd St., New York 36, N. Y.

Index to American Standards and Recommendations, September, 1954. 2 pp. Also available from the American Standards Association. No charge.

Lists by subjects all up-to-date American Standards on cinematography. This Index was prepared by SMPTE, sponsor for the ASA project on Motion Pictures, PH22.

Tubular Exchanger Manufacturers Association, Inc

53 Park Place, New York 7, N. Y.

• **Addenda to "Standards of Tubular Exchanger Manufacturers Association."** October, 1954. 7 pp. Available free to present holders of the Third Edition of TEMA Standards.

Covers changes and additions approved since publication of the Third Edition in 1952.

Commodity Standards Division Office of Technical Services U.S. Department of Commerce

(Except where otherwise indicated, copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.)

Commercial Standards:

CS72-54, Household Insecticide (Liquid Space Spray Type for Flying Insects) (Second Edition), 10 cents.

CS120-53, Standard Stock Ponderosa Pine Doors, 25 cents.

Commercial Standard CS183-51, Boys' Trouser Size Measurements, 20 cents.

(CS183-51 may be obtained from Room 6225, Main Commerce Building, U.S. Department of Commerce, Washington 25, D. C.)

Simplified Practice Recommendations:

R207-54, Pipes, Ducts, and Fittings for Warm-Air Heating and Air Conditioning, 10 cents.

R253-54, Retail Container Sizes (Net Weight) for Frozen Fruits and Vegetables, 5 cents.

For Easy Reference In Shop And Drafting Room

The abridgment of American Unified Standards for Screw Threads and Their Gages

Handy tables supply basic information—conserve man hours—show at a glance the data you need when selecting, designing, making, or testing the most widely used screw threads. Manual includes formulas for all major pitches and minor diameters for the six unified classes, also related information not found in the standards.

Here is an opportunity to provide this useful manual for your engineers, shopmen, tool designers, and draftsmen in case you missed it when the book was first issued.

ASME SCREW THREAD MANUAL

1953 edition 68 pp.

Heavy paper cover $2.50

Published by the American Society of Mechanical Engineers—Copies available from the American Standards Association.

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70 East 45th Street, New York 17

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WHAT IS YOUR QUESTION ?

Are there standards for cast-iron spigots and bell pipes for water supply?

In the September issue of THE MAGAZINE OF STANDARDS the reply was "American Standard Specifications for Cast-Iron Pit Cast Pipe for Water or Other Liquids, A21.2-1953, which agrees with the American Water Works Association standard C102." The following comment has been received:

"This American Standard is for cast-iron pit cast pipe. The pit cast method of making cast-iron pipe has been generally superseded by the centrifugal method, and the majority of pipe is cast by this more modern procedure. There are two methods of making cast-iron pipe centrifugally, and the American Standards Association has issued specifications for each method. The specifications for water pipe are in American Standard Specifications for Cast-Iron Pipe Centrifugally Cast in Metal Molds for Water or Other Liquids, A21.6-1953 (AWWA C106), and American Standard Specifications for Cast-Iron Pipe Centrifugally Cast in Sand Lined Molds for Water or Other Liquids, A21.8-1953 (AWWA C108)."

Another reader verifies the reference to A21.6 and A21.8 and comments: "By far the great majority of cast-iron pressure pipe which is made today is manufactured in accordance with the process as covered by A21.6 and A21.8. The old and now practically obsolete method of manufacturing pit cast pipe as covered by A21.2 would, we feel, penalize a prospective buyer were he to try to procure pipe manufactured only in accordance with A21.2."

Confusion has been caused by a "double standard" in American Standard abbreviations. American Standard Z10.1-1941, Abbreviations for Scientific and Engineering Terms, shows "diam" as the abbreviation for "diameter." American Standard Z32.13-1950, Abbreviations for Use on Drawings, shows "dia" for the same term. According to these recommendations, the drawing for a data plate on a scientific instrument should show "dia" but on the data plate itself "diam" should be used.

These and other divergent practices will be reviewed by Sectional Committee Y1 which now has supervision over both these standards. American Standard Z10.1-1941 is now under intensive revision and a revision of American Standard Z32.13-1950 will follow.

Is there a change in the temperature approved for solutions used in photographic processing?

The most recent edition of the American Standard Temperature for Photographic Processing Solutions, PH4.5-1953, calls for closer control of the temperature for developing solutions than for other photographic processing solutions but does not change the standard temperature. The temperature 68 F has been standard for some ten years. Most photographers in the temperate zones find it convenient to establish and hold.

Has any consideration been given to revising the 0.002 tolerance on diameter of Standard Commercial Taper Pins shown in Table 4 of American Standard B5.20-1947? The General Electric Standard C5A1A2, which they term "commercial" gives this tolerance as 0.003, while the 0.002 tolerance given in their specifications C5A1A and C5A1B are listed as special tolerances.

This question has been referred to the chairman of Sectional Committee B5 on Small Tools and Machine Tool Elements for committee consideration.

AMERICAN STANDARDS

STATUS AS OF NOVEMBER 5, 1954

Acoustics

American Standard Approved —

Free-Field Secondary Calibration of Microphones, Method for, Z24.11-1954.
Sponsor: Acoustical Society of America.

Standard Withdrawn —

Noise Measurement, Z24.2-1942.
Sponsor: Acoustical Society of America.

Arbitration

In Standards Council —

Commercial Arbitration, Z73.
Sponsor: American Arbitration Association.

Building

In Standards Council —

National Plumbing Code, A40.8.
Sponsors: The American Public Health Association; The American Society of Mechanical Engineers.

In Board of Review —

Installation of Gas Piping and Gas Appliances in Buildings (Not Applicable to Undiluted Liquified Petroleum Gas), Z21.30 (Revision of Z21.30-1950).

In Standards Board —

Gypsum Plastering, Specifications for, A42.1 (Revision of A42.1-1950).

Interior Lathing and Furring, Specifications for, A42.4 (Revision of A42.4-1950).
Sponsors: American Institute of Architects; American Society for Tesuing Materials.

Building Code Requirements for Minimum Design Loads in Buildings and Other Structures, A58.1 (Revision of A58.1-1945).
Sponsor: National Bureau of Standards.

Withdrawal Being Considered —

Plumbing Code, A40.7-1949.
Sponsors: American Public Health Association; American Society of Mechanical Engineers.
Note: With approval of the National Plumbing Code, A40.8, this standard will be withdrawn.

Consumer

Standards Submitted —

Computing Food-storage Volume and Shelf Area of Automatic Household Refrigerators, Method of, B38.1 (Revision of B38.1-1944).

Rating and Testing Home Freezers, Method of, B38.3.

Electrical

American Standard Published —

Electrical and Mechanical Characteristics of Apparatus Bushings (Used With Power Circuit Breakers and Outdoor Transformers), C37.4a-1954 (Supplement to Alternating-Current Power Circuit Breakers, C37.4-1953) and C57.12b-1954 (Supplement to Distribution, Power and Regulating Transformers, and Reactors other than Current-Limiting Reactors, C57.12-1949). $0.25
Sponsor: Electrical Standards Board.
Classifies bushings by voltage giving the minimum creepage distance, 60-cycle withstand test voltage, and impulse full wave withstand voltage. The lower end bushing dimensions and threaded parts dimensions are also specified.

In Board of Review —

Recommended Practice for Volume Measurements of Electrical Speech and Program Waves, C16.5 (Revision of C16.5-1942).
Sponsor: Institute of Radio Engineers.

Power-Operated Radio Receiving Appliances, C65.1 (Revision of C65.1-1952).
Sponsor: Underwriters' Laboratories, Inc

New Project Being Considered —

Terminology for Automatic Controls, C85.
Sponsor: Electrical Standards Board.

Standards Submitted —

Definitions of Terms in the Field of Linear Varying Parameter and Nonlinear Circuits.
Submitted by: Institute of Radio Engineers.

Mechanical

American Standards Published —

Circular and Dovetailed Forming Tool Blanks, B5.7-1954 (Revision of B5.7-1948). $1.00
Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders Association; Society of Automotive Engineers.

Socket Head Cap Screws and Socket Set Screws, B18.3-1954 (Revision of B18.3-1947).
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers.

In Board of Review —

Letter Symbols for Gear Engineering, B6.5 (Revision of B6.5-1949).

Gear Nomenclature (Terms, Definitions, and Illustrations), B6.10 (Revision of B6.10-1950).
Sponsors: American Gear Manufacturers Association; American Society of Mechanical Engineers.

In Standards Board —

Nomenclature for Gear Tooth Wear and Failure, B6.12.
Sponsors: American Gear Manufacturers Association; American Society of Mechanical Engineers.

Withdrawal Being Considered —

Code for Design of Transmission Shafting, B17c-1927 R1947.

Woodruff Keys, Keyslots, and Cutters, B17.1-1943.
Sponsor: American Society of Mechanical Engineers.

Withdrawal Requested —

Rotary Cone Valves, B61.
Requested by: American Society of Mechanical Engineers.

Mining

In Standards Board —

Quarry Safety Code, M28.1.
Sponsor: National Safety Council.

Office Equipment

American Standards Approved —

Non-Carbonized, Single Ply, Adding Machine Paper Rolls, Specifications for, X2.4.2-1954.

Template and Method of Attaching Dictating Machine Secretarial Hand Controls to Typewriters, X2.5.18-1954.
Sponsor: National Office Management Association.

In Board of Review —

Reflectances of Furniture for General Office Use, X2.1.3.
Sponsor: National Office Management Association.

Photography

American Standards Published —

Stability of the Images of Processed Black-and-White Films, Plates, and Papers, Method for Indicating, PH4.12-1954 (Revision of Z38.8.17-1948) $0.50

Chemical Resistivity and Photographic Inertness of Constructional Materials for Processing Equipment, Method for Determining, PH4.13-1954. $0.50

Photographic Grade Citric Acid, Anhydrous, Specifications for, PH4.107-1954. $0.25

Photographic Grade Sodium Bromide, Specifications for, PH4.207-1954. $0.25
Sponsor: Photographic Standards Board.

Cross-Modulation Tests, 16mm Variable-Area Photographic Sound, PH22.52-1954 (Revision of Z22.52-1946). $0.25

Aperture for 35mm Sound Motion-Picture Projectors, PH22.58-1954 (Revision of Z22.58-1947). $0.25

Aperture for 35mm Sound Motion-Picture Cameras, PH22.59-1954 (Revision of Z22.59-1947). $0.25

Television Picture Area—35mm Motion-Picture Film, PH22.95-1954 $0.25

Television Picture Area—16mm Motion Picture Film, PH22.96-1954 $0.25
Sponsor: Society of Motion Picture and Television Engineers.

American Standards Approved —

Threads for Attaching Mounted Lenses to Photographic Equipment, Specifications for, PH3.10-1954 (Revision of Z38.4.11-1944).

Photographic Grade Chemicals: Mono-para-aminophenol Hydrochloride, PH4.135-1954.

Photographic Grade Chemicals: Isopropylamine, 50-Percent Aqueous Solution, PH4.178-1954.

Photographic Grade Chemicals: Benzyl Alcohol, PH4.181-1954.

Photographic Grade Chemicals: Sodium Carbonate, Monohydrates, PH4.227-1954 (Revision of Z38.8.227-1948).

Photographic Grade Chemicals: Sodium Carbonate, Anhydrous, PH4.228-1954 (Revision of Z38.8.228-1948).

Photographic Grade Sodium Tetraborate, Decahydrate (Borax), PH4.230-1954 (Revision of Z38.8.230-1948).

Sponsor: Photographic Standards Board.

In Standards Board —

Dimensions for 70mm Perforated Film for Cameras Other Than Motion-Picture Cameras, PH1.20.

Focal Length of Lenses: Markings, PH3.13 (Revision of Z38.4.4-1942).

Reaffirmation Approved —

Dimensions for Bite of Film Clips, PH4.15-1954 (Reaffirmation of Z38.8.4-1945).

Safety

In Board of Review —

Safety Code for Woodworking Machinery, 01.1 (Revision of 01.1-1944).

Sponsors: Association of Casualty and Surety Companies (Accident Prevention Department); International Association of Governmental Labor Officials.

In Standards Board —

Safety Code for Controls and Signaling Devices for Graphic Arts Presses, B65.1.

Sponsors: Research and Engineering Council of the Graphic Arts Industry, Inc; National Safety Council.

Recording and Measuring Work Injury Experience, Method of, Z16.1 (Revision of Z16.1-1945).

Sponsors: Association of Casualty and Surety Companies (Accident Prevention Department); International Association of Governmental Labor Officials.

Decimal Dimensioning Scales, Z75 —

General Acceptance Method

Shopmen and designers may soon be able to buy scales calibrated in decimal dimensions in accordance with an American Standard, and produced by mass production methods. A General Conference organized by the American Standards Association met September 14 and agreed on recommendations to be incorporated in a proposed standard. The document under consideration had been prepared by a special committee of the automotive industry and a group of instrument manufacturers. This committee requested ASA action when it found that practices in regard to the use of decimal dimensioning scales varied from company to company, both within the automotive industry and in other industries. Therefore, the committee was of the opinion that this question is a matter of interest to organizations beyond the automotive industry. This was confirmed by the Company Member Conference at its June meeting when the question was put before it.

The proposal has now been referred to an editing committee for revision in accordance with the agreements reached at the September 14 conference. C. M. Wright, Chrysler Corporation, is chairman. When the editing committee reports on the completed standard it will be sent to letter ballot of those concerned before being submitted to the American Standards Association for approval.

The proposed American Standard provides for shop scales of narrow, flexible, semi-flexible, stiff, and heavy types. It also makes recommendations for combination square blades; and on allowance for "shrink." Case tapes for shop use are also included.

For drafting scales, the proposed American Standard offers draftsman's opposite bevel full size scales; opposite bevel quarter and half-size scales; opposite bevel full and half-size scales; and two bevel drafting machine scales.

Safety Code for Elevators, Escalators, and Dumbwaiters, A17—

Sponsors: American Institute of Architects; National Bureau of Standards; The American Society of Mechanical Engineers.

The sectional committee held a meeting in Washington, D. C., October 6, to give members of the committee who had submitted negative votes on the proposed revision of American Standard A17.1-1937 an opportunity to present their viewpoints to the other members of the committee.

Protection of Heads, Eyes, and Respiratory Organs, Z2—

Sponsors: National Bureau of Standards, U. S. Department of Commerce; U. S. Navy Department; Bureau of Mines, Department of Interior.

Reports from the three subcommittees, on eye protection, respiratory protection, and head protection, were discussed at a meeting of the committee October 28 in Washington, D. C. The committee now hopes that these reports are far enough along so that by intensive editorial work, a revision of American Standard Z2-1938 will be completed within the next year.

Electronic Components, C83 —

Sponsor: Radio-Electronics-Television Manufacturers Association.

A new task group to work on definitions and terminology for relays used with electronic equipment held its first meeting November 4. Chairman of the committee is J. A. Csepely, Air Arm Division, Materials and Standards Group, Westinghouse Corporation.

The new C83 task group divided the relay field into 23 different divisions and handed out assignments to the members who will prepare definitions for discussion at the next meeting, January 11.

Electrical Measuring Instruments, C39 —

Sponsor: Electrical Standards Board.

Subcommittee 1 on Electrical Indicating Instruments met October 29 and prepared a revision of American Standard C39.1-1951. One of the changes was addition of a section or insulation test in which leakage current has been specified. Another change is to specify soldering terminals as an alternate to the screw terminals called for in the present standard. J. H. Miller, Weston Instrument Company, is chairman of Subcommittee 1.

Conveyor Terms and Definitions —

Sponsor: Conveyor Equipment Manufacturers Association.

This beautifully printed and interesting manual has been submitted to the American Standards Association for approval under the Existing Standards Method. A canvass of groups concerned is now under way to determine whether or not a consensus exists.

The manual was prepared by a technical committee of the Conveyor Equipment Manufacturers Association when the need for uniform terms and definitions was made evident during the last war. At that time it became evident that the Armed Services (even among themselves), civilian agencies, and industry were using different vocabularies in discussing and specifying

conveyors. In writing the definitions, an attempt has been made to define each type of conveyor by what it "is" rather than by what it "does." Trade names have been avoided except in instances where long usage has made common property of such names.

The technical committee that prepared the manual is composed of conveyor engineers from all branches of the conveyor industry.

Small Tools and Machine Tool Elements, B5 —

Sponsors: Metal Cutting Tool Institute; Society of Automotive Engineers; National Machine Tool Builders' Association; The American Society of Mechanical Engineers.

For a discussion of proposed revisions of American Standards on splines, see page 363.

Methods of Recording and Compiling Accident Statistics, Z16 —

Sponsors: National Safety Council; Association of Casualty and Surety Companies, Accident Prevention Department.

Because a revision of the current edition of American Standard Methods of Compiling Industrial Injury Rates, Z16.1-1945, is near completion, it has been decided not to publish more decisions of the Committee of Judges until the new edition is available. The new standard will be entitled, Method of Recording and Measuring Work Injury Experience.

Insulated Wires and Cables, C8 —

Sponsor: The Electrical Standards Board.

Charles T. Hatcher, division engineer, Consolidated Edison Company of New York, has been named chairman of this committee. Mr Hatcher, who has been in responsible charge of cable engineering and cable engineering administration for the Consolidated Edison system since 1933, was transferred to the grade of Fellow in the American Institute of Electrical Engineers in April of this year. He was honored for "service and leadership in research and engineering of electric power cables and their application."

Refrigeration Nomenclature, Y53 —

Sponsor: American Society of Refrigerating Engineers.

As a result of objections by the National Electrical Manufacturers Association to Part D, Definitions, of the Proposed American Standard Refrigeration Nomenclature for Text and Drawings, representatives of ASRE and NEMA met on November 5 to resolve their differences. The resultant agreements will necessarily have to be resubmitted to members of Y53 for their concurrence prior to submittal to ASA for approval.

Letter Symbols, Y10 —

Sponsors: The American Society of Mechanical Engineers.

The Y10 Subcommittee 14 on Letter Symbols for Feed-Back Control Systems (servo-mechanisms) has completed preparation of a draft American Standard which will be circulated soon for industry comment. It will then be sent to members of Sectional Committee Y10 for letter ballot vote. Work of this subcommittee has brought together the combined talents of the many organizations, such as the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the Institute of Radio Engineers, Instrument Society of America, and others, who have been engaged individually in work on letter symbols for feed-back control systems.

Charles T. Hatcher

Coordination of Dimensions of Building Materials and Equipment, A62 —

Sponsors: Producers' Council; American Institute of Architects; Associated General Contractors of America, Inc; National Association of Home Builders.

Eleven European countries are cooperating, under the aegis of the European Productivity Agency, to develop Modular Measure (the more popular name for "Modular Coordination"), reports William Demarest, Jr, Secretary for Modular Coordination, American Institute of Architects, Washington, D. C. On October 11, their representatives commenced a one-week organizational conference in London to launch their project. "To the best of our knowledge, the United States is so far the only country to have made extensive use of Modular Measure in building," Mr Demarest comments. "We have therefore urged the participants in the new European project to refrain from any final decisions on their program until the Building Research Institute here has conducted its December 9th conference [see page 365] to evaluate the American movement for Modular Measure."

"Don't worry about the likelihood of the foreign group plumping for some maverick module," Mr Demarest advises. "We have noted that the recommendations of European leaders in this field have recently been limited to 4 in., 10 cm, or multiples of either."

"Square bubbles" is the most recent popular term for the modular unit. "It may sound goofy to talk about building houses with 'square bubbles', but that just about sums up one of the most serious progressive movements in the building industry. . . ." This is the start of a feature story sent out over the wires of the Associated Press early in October. The story then settles down to a very clear, simple explanation of what Modular Measure is all about and what promise it holds for purchasers of buildings.

AP's "bubbles," Mr Demarest explains in his October 11 *Modular Coordination Memo,* are the 4-inch cubical Modules which serve as the basic units in Modular Measure.

"If all makers of building materials agreed to this, colossal savings would result," the writer of the AP article concludes.

• • **Interchangeability of electronic tubes** in sockets is the purpose of the new International Recommendation on Dimensions of Electronic Tubes and Valves, just published by the International Electrotechnical Commission. The publication gives standard dimensions with the necessary tolerances of electronic tube and valve bases, as well as general requirements, with the idea of insuring that dimensions essential for interchangeability shall be the same in all countries. Standards for the gages needed to assure interchangeability are also included.

The publication contains two parts. Part I covers all the internationally standardized bases, some of which are used in Europe but not in the United States. Part II gives Electronic Tube and Valve Outlines.

Copies of IEC Publication No. 67 (1954), Dimensions of Electronic Tubes and Valves, can be obtained from the American Standards Association at $4.00 each.

• • **"The Role of Company Standards in Industrial Administration,"** by Dickson Reck (*Advanced Management*, April, 1954) is the first paper resulting from the research program of the Standardization project at Mellon Institute. This project is sustained at the Institute by the Sarah Mellon Scaife Foundation. Subsequent papers will deal with other important applications of standardization. As announced by W. A. Hamor, Director of Research of the Institute, all the papers published under this project "will be extensions of the central idea that well conceived and soundly executed programs of standardization can free initiative and increase efficiency by reducing or eliminating obstructive or unnecessary variety of terms, methods, parts, and products."

Dickson Reck, author of this first paper in the series, is lecturer in Business Administration at the University of California, and is an Advisory Fellow of the Mellon Institute.

Reprints of the paper can be obtained from the American Standards Association, without charge.

STANDARDS OUTLOOK

by LEO B. MOORE

ORGANIZATIONAL POSITION

WHERE does the standards department belong in company organization? Every survey shows that the average company considers standards work to be an engineering activity. As such, the standards group is a part of the engineering department, and the close relationship to this department is indicated by the term standards "engineer."

It is true, however, that many companies with very successful standards programs have placed them organizationally in a wide variety of positions, including the purchasing department, industrial engineering, personnel, and even research. This varied treatment of standards work may exist even though the company and its products are engineering-oriented, such as is, for example, a public utility, a chemical concern, and an equipment manufacturer.

Although the question of the appropriate organizational position of the standards department may be considered purely academic when it is a matter of actually changing this position, a standards man might well ask whether his activity is aided or impeded by his being pin-pointed in a particular area of the company. The growing impact of standards thinking in all areas of the business might well raise some questions of this nature.

In a company where cutting across organizational lines is not a major misdemeanor, the standards engineer may feel free to contribute his thinking to other functions of the company. Generally, however, it must be conceded that the acceptance of the premise that standards belong exclusively in one area tends to restrict the bulk of the activity to that area. This means that the standards man must possess the ability to move with the tide of opportunity if he wishes to extend himself and his work. The strength of his impact depends on his capacity to handle the human relations problems involved and to transfer his interest and skill to others who may share standards thinking with him.

There probably is no one right organizational position that will permit complete freedom of activity, and there probably never will be one. But it is perfectly clear that the restriction of standards thinking by organizational arrangement tends to be unrealistic. Industry has made tremendous advances in production and engineering, much of it with the help of the standards man. Industry is becoming increasingly aware of the high price it is paying for paperwork, packaging, handling, and miscellaneous supporting activities to the main stream of production. How can the standards people help with these problems? The principles and practices of standardization may be employed as well in the office, the packing room, and in the storage and shipping functions as in the plant. Forms control, box, carton, and crate specifications, and handling equipment are only variations of the same kind of work that standards engineers have long been doing.

In many companies, the fact that the standards department is assigned to a particular function causes many areas of opportunity to be avoided or neglected. It would seem that whatever its organizational position, the standards department should be free to exercise its talents and to cut across these lines of demarcation without fear or hesitation.

Mr Moore is Assistant Professor of Industrial Management at the Massachusetts Institute of Technology where he teaches a full-term course in industrial standardization.

PLANT ENGINEERS

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Here are American Standards that help give you the information you need to plan safe and adequate low voltage power distribution facilities for an industrial plant, electric utility installation, or large commercial building—

American Standard, Low Voltage Air Circuit Breakers (includes Application Guide), C37.13-1954

American Standard Test Code for Low Voltage Air Circuit Breakers, C37.14-1954

American Standard Rated Control Voltages and Their Ranges for Low Voltage Air Circuit Breakers, C37.15-1954

THIS GROUP OF AMERICAN STANDARDS GIVES YOU:—

- **Definitions of terms used in circuit breaker technology**
- **What conditions to consider in selecting low voltage circuit breakers**
- **The tests manufacturers should give the circuit breakers you select**
- **What information to include in your inquiries to manufacturers**
- **An accepted basis for evaluating circuit breakers you consider buying**
- **A simplified method to determine what short circuit currents your system can develop**

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